Speech Handicapped School Children

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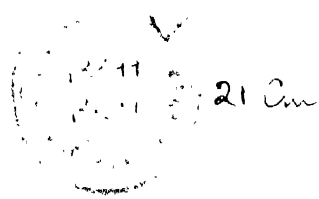
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SPEECH HANDICAPPED SCHOOL CHILDREN

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TO WENDELL JOHNSON

Listen to the child well, to what he is saying, and almost saying, and not saying at all. He has something he wants to tell you, something that has meaning for him, that is important to him. He is not just being verbally frisky.

Respect him as a speaker. Listen to him enough to hear him out. It is wonderful for him as a growing person to feel that he is being heard, that others care about what he is saying. Assume he's doing the best he can and that it is more important for him to want to talk to you than to sound correct.

—Excerpt from a class lecture
by Wendell Johnson at the

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PREFACE

This is a textbook for beginning courses in speech pathology and for education courses concerned with the problems of speech handicapped school children. It is particularly adaptable to the textbook needs of an introductory course with a mixed enrollment made up of students whose major interests are distributed among speech pathology and audiology, education, general speech, psychology, social work, rehabilitation, nursing, child welfare, premedicine, predentistry, and other areas.

Fundamentally, the book deals with four major questions: (1) What kinds of speech disorders are found among school children? (2) What are the physical, psychological, and social conditions, hearing impairments, and other factors that are importantly related to these speech problems? (3) What can the classroom teacher do about the speech problems of her pupils, on her own or in cooperation with a speech specialist? (4) What are the basic diagnostic and remedial approaches of speech specialists working in schools and of speech clinics in dealing with these problems?

In this rapidly shrinking world, speech is not to be taken for granted. It is coming to be more and more widely recognized that speech training for all children, including speech correction for the many who need it, is fully as essential to sound present-day education as training in the three R's. We now know that for the children who need them—40 or more out of every 1,000—our schools have little to offer that is more important than remedial speech services. And we know, as well, that for all our children, handicapped or not, there is little we have to give them that can enrich their lives more fully than clear, pleasant, effective speech.

As a matter of fact, every teacher, by design or unwittingly,

does something about the speech problems of her pupils. Every school administrator and supervisor determines policies that necessarily affect speech handicapped children. There is no question as to *whether* the schools are doing, or should be doing, something for or about pupils who have speech disorders. They cannot avoid doing something. The only question is: *what* might they best be doing? That is what this book is about.

It is quite clear that anything that makes education more rewarding for speech handicapped pupils must necessarily benefit all other school children as well. The kind of education that is best for speech handicapped children involves an educational philosophy, a general school policy, a type of teaching, and a kind of teacher that combine to make for very effective education in a broad sense. That kind of education, therefore, is also what this book is about.

Most of our states now have laws that recognize the special needs of speech handicapped school children. Remedial speech specialists are employed in a considerable number of school systems, and the rapidly growing demand for such specialists far exceeds the available supply. In fact, the demand is not likely to be met fully for many years to come. Meanwhile, a large proportion of the nation's two million or more school children who have impaired speech must necessarily depend on their classroom teachers for the understanding they require, without benefit of remedial services.

In more and more states this situation is being faced frankly and constructively. The study of speech disorders is being included among the courses for prospective classroom teachers, and so there is a need for this kind of textbook. This is a need, moreover, that is felt not only by those responsible for the training of classroom teachers, but also by those who are charged with the responsibility of preparing students to function effectively as speech clinicians in the schools—and under certain circumstances in or out of the schools—in which they need not only the good will but also the active cooperation and actual assistance of classroom teachers. We have kept this specific need in mind in planning and writing this book. We have presented the speech handicapped child as he must be dealt with in the classroom as well as in the clinic, and as he must be helped by both the speech

clinician and the classroom teacher working together effectively. Moreover, we have considered the ways in which both the remedial speech specialist and the teacher can cooperate with the parents in the child's best interests.

Some of the more basic principles and methods of helping speech handicapped children can be applied with good effect by classroom teachers, and a knowledge of them will enable administrators and teachers generally to see much more clearly how they can work hand in hand with the speech clinician. It is the purpose of this book to help the entire school staff to become more understanding and effective insofar as boys and girls with speech difficulties are concerned. Because this is that kind of book, it is also necessarily designed in a unique way to acquaint the professional speech clinician with the full extent of his opportunities and responsibilities as a specialized instructor and a consultant and as a coworker with the school administrator, supervisor, and classroom teacher.

A book of this kind is also to be expected to find its way into the hands of many readers in addition to those so far indicated, a fact which we have taken duly into account. We have had in mind, particularly, those educators who discharge major responsibilities at the college and university level—professors, deans, and presidents—as well as directors of foundations, commissions, and state and federal programs. These educational leaders will find here an informative statement of a great and pervasive need in American education, together with a basic philosophy and practical recommendations for meeting the need on the level of educational statesmanship.

The book may be expected to have value, too, for pediatricians, psychiatrists, otolaryngologists, neurologists, physiatrists, and other physicians, as well as dentists, public health nurses, social workers, child psychologists and clinical psychologists, parent-education workers, and parents. Adults who have speech disorders may also find it of interest and practical value. Finally, it is designed to meet the needs of parent-teacher associations, in-service training programs for teachers and child welfare workers, and child-study and parent-education groups interested in becoming acquainted with the problems of speech handicapped children.

As a group of authors with a common basic professional back-

ground but with different areas of intensive specialization, we have worked together closely to present a unified and comprehensive treatment of the problems under consideration. While all of us have contributed our general knowledge and judgment to the over-all integrity of the book, the specific chapters for which each of us has been chiefly responsible are as follows:

Spencer F. Brown: Chapters Six, "Retarded Speech Development," and Seven, "Cleft Palate; Cerebral Palsy."

James F. Curtis: Chapters Three, "Disorders of Articulation," and Four, "Disorders of Voice."

Clarence W. Edney: Chapter Nine, "The Public School Remedial Speech Program."

Wendell Johnson: Chapters One, "Speech Disorders and Remedial Speech Services," Two, "The Clinical Point of View in Education," and Five, "Stuttering."

Jacqueline Keaster: Chapter Eight, "Impaired Hearing."

Wendell Johnson served as general editor. After his death on August 29, 1965, this responsibility passed to his associate, Dorothy Moeller, who carried the work to its conclusion, with the counsel of James F. Curtis.



We, his colleagues in writing and editing this book, are grateful beyond measure that Wendell Johnson knew there was to be a third edition, that he could see it taking shape, that he could share with us his hopes for it, that he could place on its pages the ideas and ideals he had formed in his distinguished career as a scholar and in his day-to-day venturings as a compassionate and understanding human being. We are grateful on behalf of those in need who may find their requirements satisfied here because his days were long enough for this work. But we are grateful, too, because from the beginning this was his book. His was the original idea; his was the encouragement and enthusiasm and gentle prodding that brought the first edition to print—then the second —now the third. Since his passing, as we have turned again to the tasks that remain, we have been pleased to find that very naturally, and without discussion or plan, we have come to think of this book as a memorial to him—a memorial to celebrate the pur-

pose of his living: to be helpful to those who need help. We would like to think that in the measure this can be so, we are saying thank you to a friend admired and much beloved, to a great and good man.

We are indebted to others in ways much too complex to be acknowledged completely. We owe our professional knowledge to the scholars and scientists who have preceded us and to our own teachers, colleagues, and students. We are grateful to the institutions in which we have been privileged to study and work, and as present or past members of the faculty of the University of Iowa we want particularly to acknowledge the fact that for well over half a century the administration of the University—presidents, deans, and department heads—has given constant encouragement and support to the study of speech, language, voice, and hearing, and their disorders. We wish to pay special tribute to the pioneering vision of the late Dean Carl E. Seashore and to his research, teaching, and creative administrative labors from 1897 to 1948, to the vigorous and fruitful professional leadership and stewardship of Professor Lee Edward Travis from 1924 to 1938, Professor and Dean George D. Stoddard from 1926 to 1940, the late Professor E. C. Mabie from 1920 to 1956, and Professor Dean M. Lierle, M.D., from 1930 to 1964; in paying this tribute we are joined by all the other faculty members and administrative officers, past and present, who have shared in the steady and continuing growth of the program.

In the preparation of this third edition of *Speech Handicapped School Children* we have had the advantage of the reactions of instructors and students who have used the first and second editions. For these reactions we are very grateful. We acknowledge with warm thanks the suggestions and criticism of Cletus G. Fisher, James C. Hardy, Jay Melrose, Dorothy Sherman, D. C. Spriestersbach, and Dean E. Williams of the University of Iowa faculty, who read and evaluated parts of the manuscript. The content of the book is the better for their efforts. It is of course to be understood that any inadequacies or inaccuracies in the text are the responsibility of the authors, and theirs alone.

We are deeply grateful to the Louis W. and Maud Hill Family Foundation for its considerable contribution in its support of

certain aspects of the University of Iowa research program on which portions of this book are based; its support of the University's Louis W. Hill Research Professorship, held by Wendell Johnson; and its support of the post of his editorial associate, held by Dorothy Moeller. It is a pleasure to acknowledge with appreciation the interest and encouragement of A. A. Heckman, the executive director, and the Board of Directors of the Foundation.

We value the high competence and warm interest of Varena Wade, who has typed the several drafts of the manuscript, who has assisted in proofreading and preparation of the index, and who has attended to diverse other details that are part of producing a book.

Many others will know that they, too, have helped, directly and indirectly, and they will understand that the authors, individually and as a group, feel indebted to them and wish that it might be possible to make specific and adequate acknowledgment to each of them personally. The authors are particularly grateful to their families for the patience and moral support, and for the great deal that eludes even the finest of verbal nets, without which this book would not have been written in the first place, then revised once, and now revised a second time.

ONE



SPEECH DISORDERS AND REMEDIAL SPEECH SERVICES

If all the children of school age in the United States who are seriously handicapped in speech were brought together in one place, they would make a city about the size of Philadelphia—this nation's fourth largest metropolis. Their number, conservatively estimated at 2,225,000, exceeds the population of the whole state of Kansas or Mississippi; in fact, it exceeds the respective populations of 23 of the 50 states. Moreover, this is a conservative estimate: it includes only those children, 5 to 19 years of age, who have speech or hearing handicaps so marked that "they are certain to go through life at a serious disadvantage vocationally, socially, and in intimately personal ways if not given appropriate corrective attention."[1] Speech handicapped children are not only

[1] Wendell Johnson, *Children with Speech and Hearing Impairment: Preparing to Work with Them in the Schools*, bulletin 5, Office of Education, U.S. Department of Health, Education, and Welfare, 1959, p. 5. This bulletin's incidence estimate of 4 percent is projected here on the basis of U.S. Bureau of Census population totals as given in *Current Population Reports* (March), 1966.

the largest group of exceptional children within the total population but also the largest group in the area of special education in the nation's elementary and secondary schools. This is so today just as it has been in every study made by the Office of Education since 1931, when comparable data first were gathered.

Recent progress in special education for all handicapped children has been called "encouraging";[2] special education enrollment has been growing faster than total school enrollment; the Congress of the United States has taken official notice of needs for special education and in the 1960s voted substantial funds to help train individuals for professional work with handicapped children; the Office of Education has a new division concerned exclusively with the education of such children.[3] But, in spite of gains like these, "rough prevalence estimates in the various areas of exceptionality indicate that the program as a whole is probably far short of providing special education for every child who needs it."[4] For children with speech handicaps, the simple arithmetic of the situation supports that point of view: the best estimate now, based on census and enrollment surveys and trends, is that only one speech handicapped child in four is receiving the remedial speech instruction he needs.[5]

The substantial progress that has been achieved in recent years

[2] Romaine P. Mackie, Harold M. Williams, Patricia P. Hunter, *Statistics of Special Education for Exceptional Children and Youth 1957–1958* (Biennial Survey of Education in the United States, 1956–1958), Office of Education, U.S. Department of Health, Education, and Welfare, 1963, p. 2.

[3] A description of the government program, particularly as it relates to training in the area of speech, may be found in an official statement of the American Speech and Hearing Association, *Asha* (1964), *6* 289–291.

[4] Mackie, Williams, and Hunter, *ibid.*

[5] Since comprehensive data on prevalence are lacking, and since definitions and evaluations of handicap vary within the literature, the estimates presented in these opening paragraphs are very conservative, more conservative than most of those previously published. They are based on information from these sources: *Statistical Abstract of the United States* (85th ed.), Bureau of the Census, U.S. Department of Commerce, 1964; Office of Education bulletin 5, *op. cit.;* Robert Milisen, "The Incidence of Speech Disorders," in Lee Edward Travis (ed.), *Handbook of Speech Pathology* (New York: Appleton-Century-Crofts, 1957), chap. 7; Mackie, Williams, and Hunter, *op. cit.; Public School Speech and Hearing Services,* monograph 8, *Journal of Speech and Hearing Disorders,* 1961; and American Speech and Hearing Association Committee on Legislation, "The Need for Adequately Trained Speech Pathologists and Audiologists," *Asha* (1959), *1*:138–139. See also William E. Castle, "Employment Opportunities in Speech Pathology and Audiology," unpublished paper, Central States Speech Association meeting, Chicago, 1966, and Parley W. Newman, "Speech Impaired?," *Asha* (1961), *3*:9–10.

has been made in response to a growing consciousness of need. The basic need for remedial speech services exists because the distinctive mark of humanity is speech; the impairment of speech is a distinctively human impairment. The number of persons who understand this in a clearly conscious and articulate fashion is becoming ever greater in this highly verbal age of incessant world-wide communication, and it is universally understood on the level of unspoken feeling. We know as though by instinct that speech gives wings to the human spirit; those whose wings are weak or unnimble command our sympathetic attention and our will to help.

Noticing more and more the need that exists, we become increasingly aware of the shortage of speech specialists adequately trained to meet this need. On the national level the American Speech and Hearing Association, since its organization in 1925, has worked toward filling the need both by spreading the word that the need exists and by supporting high professional standards for those in the field, whether in clinical activity, teaching, or research. Before 1965, the academic requirement for Association membership was the bachelor's degree in speech pathology and audiology or tangent areas; since then it has been the master's degree; beyond this, the Association issues a Certificate of Clinical Competence for members who desire it and who can show adequate "competence resulting from specialized training and experience."[6] Of the Association's 10,000 members who are actively employed, 7,500 are in clinical work.[7] Of those in clinical work, 5,600 are in school settings; also in school settings are an estimated 4,000 additional speech clinicians who are not members of the Association.[8] This means that the total clinical working force in the field is about 11,500 of whom perhaps 9,600 are in the schools, or, rounded optimistically, the totals might be 12,000 and

[6] From the Association's official statement of requirements for the Certificate; this statement, the Association's by-laws, code of ethics, and other documents are carried in the *Directory*, usually in the front pages preceding the various listings of members. The *Directory* is issued annually, under that title.

[7] Kenneth O. Johnson and Newman, "A Study of Personal Incomes in the Speech and Hearing Profession," *Asha* (1962), *4*:59–70.

[8] Ira M. Ventry, Newman, and Johnson, "The 1964 Membership of ASHA—Survey Results," *Asha* (1965), *7*:219–230; and Castle, *op. cit.* and personal communication.

10,000, respectively. This estimate would seem reasonable in view of the staffing needs not only of public schools but also of the numerous speech and hearing clinics of colleges and universities, hospitals, special schools, and regional and community centers.[9] The range of differences represented by these 12,000 individuals with respect to degree of professional qualification is to be duly considered, of course.[10]

"Good practice" suggests that an adequate school program requires one trained speech clinician for each 100 speech handicapped children enrolled and that an adequate community program for adults requires, in addition, two trained speech clinicians for every 50,000 of the total population in areas that already have strong speech and hearing programs in their schools.[11] On the basis of current population data, this suggests that an adequate national program would require a minimum of 20,000 trained clinicians to work in the schools and 4,000 more to work with adults, again a conservative estimate not only because it is based on a conservative estimate of prevalence of speech handicaps among school children but also because it proceeds from the assumption that a strong school program already exists in every community.[12] Even though we use a conservative estimate of need, we find that some 12,000 certified and noncertified clinicians are carrying on a program that calls for the services of 24,000 trained personnel. We also must add to these considerations the increasing need created by the continuing substantial population growth.

It has been pointed out that "mortality due to death, reaching

[9] For some years the *American Annals of the Deaf* has carried a listing of such clinics in its January issue. Included also are clinics associated with the program of the National Society for Crippled Children and Adults in various communities of the 50 states, the District of Columbia, and Puerto Rico.

[10] As reported in *Public School Speech and Hearing Services, op. cit.*, p. 94, only 32 states had certification requirements for public school speech and hearing clinicians which approximated those of the American Speech and Hearing Association. It is probable that the number now is larger. This statement is to be evaluated, however, in view of the fact that, at the time the report was made, the Association's academic requirement for membership, which is a prerequisite to certification, was the bachelor's degree; since 1965, that requirement has been the master's degree. See also Ruth Beckey Irwin, "Speech Therapy in the Public Schools: State Legislation and Certification," *Journal of Speech and Hearing Disorders* (1959), *24*:127–143.

[11] *Asha* (1959), *loc. cit.*

[12] *Statistical Abstract of the United States, op. cit.*, p. 109.

of retirement age, marriage, and other reasons for retirement probably runs to 10 percent at the very least, and just possibly to 20 percent of the active working force annually.[13] Replacement, therefore, requires from 100 to 200 new trainees each year per 1,000 active workers in the field." To maintain the current working force, then, from 1,200 to 2,400 new clinicians would be needed each year just as replacements. According to surveys by the American Speech and Hearing Association, 811 students received graduate degrees in speech pathology and audiology in 1963, and 1,120 students in the 1964–1965 academic year.[14] It is considered likely that the increase has continued; if this is so and if the majority of these new graduates joined the active working force they possibly would be of sufficient number to meet only the minimum requirements for maintaining that force at its present inadequate size. It is clearly important that everything possible be done to increase the number of *well-qualified* speech clinicians in our schools. At the same time, it is essential that classroom teachers be prepared as well as they can to work effectively in partnership with the speech specialists who are available, and to be as helpful as possible to the speech handicapped pupils in their classes when there is no remedial speech instructor at hand.[15]

The basic fact is that every classroom teacher teaches speech. Wittingly or unwittingly, she favors certain standards of speech, voice, and language. Both as speaker and as listener she sets an example and creates an atmosphere in some measure favorable or unfavorable to the best development of each child's speech. Above all, from a clinical speech point of view, each day she creates a situation in which the child with a speech problem tends to be either demoralized or helped not only to improve his speech but also to live gracefully with his problem as long as it persists and to grow as a person through his experience with it. The ad-

13 American Speech and Hearing Association Committee on the Midcentury White House Conference, "Speech Disorders and Speech Correction," *Journal of Speech and Hearing Disorders* (1952), *17*:129–137.

14 American Speech and Hearing Association, "The Status of Professional Training in Speech Pathology and Audiology—1963," *Asha* (1963), *5*:865–873; and Castle, personal communication.

15 A provocative study of the facts and possibilities relevant to the problem of cooperation between speech clinicians and classroom teachers has been reported by Gretchen Wright Lloyd and Stanley Ainsworth in "The Classroom Teacher's Activities and Attitudes Relating to Speech Correction," *Journal of Speech and Hearing Disorders* (1954), *19*:244–249.

ministrators of our schools also determine in countless ways by their policies and practices whether the youngster who stutters or lisps shall gain or lose by participation in the great American adventure of education for all. The educational leaders, teachers, and speech clinicians of this nation exercise, individually and together, an influence of fateful importance in the lives of our speech handicapped school children.

WHAT IS A SPEECH PROBLEM OR IMPAIRMENT OR DISORDER?

A straightforward general answer to the question of what is a speech problem or impairment or disorder is that a child's speech presents a problem for himself and for others when his listeners pay critical or anxious, or disapproving attention to how he speaks, or are distracted from what he is saying by his way of saying it. This is a very general answer; it will be refined and developed throughout the book. It is important at this stage to stress the following basic points:

1. Speech serves the fundamental purposes of self-expression, self-communication, and communication between the speaker and other persons. When there is a speech disorder all of these basic functions are affected in some degree and, in specific cases, one may be more seriously disturbed than another.

Whenever we deal with a speech disorder or disturbance we have to do with a speech *problem,* as well as, or even rather than, a disorder of speech or of the speaker, and so at this point there is a peculiarly general and fundamental notion to be introduced. It is this: *A problem has members.* The speaker is not the only member of an articulation or voice problem—the problem we call stuttering—or any other problem of communication. Some, in certain cases possibly all, of the speaker's listeners are also members of the problem. Some members are more important than others. In working with any speech, voice, language, or hearing problem—any communication problem—it is essential that you find out who the main members of the problem are.

Who was the first member of the problem? That is, who first

felt there was a problem? It may not have been the speaker, and this is particularly so when the speaker is a child. Perhaps the mother, or a solicitous aunt or grandmother, or a teacher first felt there was a speech problem. That was before the child himself was in any observable or demonstrable way concerned about, or even aware of, anything he was doing in speaking. Indeed, for his age and for his general, or momentary, circumstances he may have been speaking correctly, that is, in a way that would be of no concern to a properly informed and reasonable observer.

Which members of the problem are doing most to keep the problem alive or to aggravate it? Which ones seem most likely to be cooperative and constructive in helping to deal with the problem effectively?

These are among the most important questions to be considered in diagnosing or describing *the problem* in a specific case and in working out a program of counseling, education, remedial instruction and activities, and whatever else might be included under the term "therapy" (it is to be noted that this word, like "therapist" and several other words commonly used in this field, is basically a medical term and it is best employed in the area of remedial speech with due appreciation of the fact that it is a "borrowed" term and does not always fit the facts very well).

A problem of the sort we are discussing may be regarded as having three main parts or components: (1) the speech characteristic, (2) the listener reaction to that characteristic, and (3) the speaker reaction to the characteristic and to the listener reaction. The problem takes its shape from the size, relationship, and interaction of these components.

One way to visualize this concept of a speech problem is to regard each of the problem's three components as one dimension of a three-dimensional form, the size of each dimension corresponding to the size (degree of severity or intensity) of the component it represents. If the dimensions are of equal size, then the form is a cube, as in Figure 1. In reality, as suggested above, the dimensions almost never are equal in size; moreover, within a given problem the size of each dimension can be expected to vary as situations, number of listeners, and other relevant factors vary. For example, let us consider a specific problem in which

the speech characteristic is harshness of voice. Since harshness may range from slight to very severe, depending on time, place, situation, and physical condition, the speech-characteristic dimension of the problem (x in Figure 1) will be correspondingly small or large. It is noted that various members of this problem react to the harshness in different ways; some virtually disregard it, others are only moderately aware of it, others are bothered, still others are extremely annoyed by it. Depending on the degree of concern of the listeners, the listener-reaction dimension of the prob-

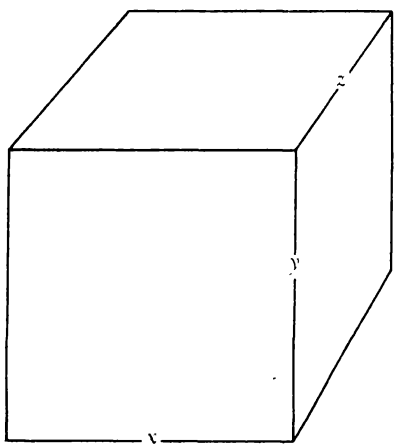


Figure 1. Diagram of a speech problem. Each dimension of the figure represents one of the component parts of the problem: x = the speech characteristic; y = listener reactions; z = speaker reactions.

lem (y in Figure 1) will be very small to very large. Now the speaker reactions to his listeners and to the harshness of his own voice vary from complete lack of awareness, to virtual indifference or disregard, to calm acceptance, to extreme sensitivity and embarrassment and feelings of depression, to resentment of the negative reactions of others, even to maladjustive evaluations of the voice characteristic, and of the real or imagined attitudes and reactions of other people to it and to him. And so the speaker-reaction dimension of the problem (z in Figure 1), like the other dimensions, will be appropriately small or large.

The three dimensions do not necessarily vary together, or by the same amount, or in the same direction. Let us say that we are looking at a given problem at a particular moment. We find that the harshness of voice is slight, that the reaction of listeners

amounts to deep concern, and that the reaction of the speaker is one of moderate awareness. The x dimension of the problem as diagrammed is small, the y dimension large, the z dimension larger than x but smaller than y. In other words, the "shape" of the problem differs from the cube in Figure 1 by being much higher and somewhat deeper. The relative size of the dimensions gives us some hint of what kind of a contribution each component (dimension) is making. In general we find that the greater the sum of $x + y + z$, the more severe or complicated the problem.

As indicated in Figure 1, it is a useful point of view that as speech clinicians we deal, above all, with problems; that is, we are concerned not only with misarticulated sounds, or harsh voices, or with disfluency, in and of itself. We are concerned also, as Travis emphasized many years ago, with the speaker as a person.[16] Moreover, it is to be stressed that we are concerned also with the speaker's important listeners. We are interested in their attitudes toward the speaker, their ways of "explaining" or thinking about the problem, how aware they are of their own part in creating the problem, and in making it worse or in helping to deal with it constructively. We want to know how the speaker reacts to these attitudes and ways of thinking and to the degrees of the listener's self-awareness. For example, a grandmother's apparent lack of awareness of her own unfortunate effects on a child's speech may present not only the child but his parents as well with a baffling and distressing dilemma. We need to observe what each important listener says and does when the speaker talks to him or her, and how the speaker responds to these reactions from his listeners. In general, we are fundamentally concerned with the interactions between the speaker and his listeners. We are concerned with the communicative interactions between and among the members of the problem.

The key idea is that of communication. As speech pathologists or clinicians we deal with problems of impaired or unsatisfactory communication. This means that in each case we are concerned with all the different persons who are involved in *the*

16 Travis, "A Point of View in Speech Correction," *Quarterly Journal of Speech* (1936), 22:57–61.

pattern of communicative relationships that is impaired or disordered. Just as you find it easier to speak with a close friend than with certain teachers, or with your boss, or even at times perhaps with your parents, or with other authority figures, or with strangers, so a child or adult who speaks with a cleft palate, or who performs the incoordinatings of cerebral palsy as he talks, or who does the tensings of stuttering, finds that he speaks more easily and clearly and fluently to some listeners than to others. In a very important sense, we can say that, as diagnosticians, we have the task of finding out the differences between the good and the poor speaker-listener relationships in each case; and, as clinicians, our task is to transform the poor relationships into good ones and to make the good ones still better.

In diagnosing, we look for the factors that contribute to the communicative problem in each case; in conducting therapy or remedial instruction we try to change or eliminate the factors that can be changed or eliminated, and we help the members of the problem to live more understandingly and effectively with whatever cannot be eliminated or modified. When we are successful the various members of the problem learn to communicate with one another more satisfactorily, and they come to live together in ways that are better not only for the speaker but for the other members of the problem as well.

2. It follows from the foregoing discussion of the *problem,* that a teacher's working definition of impaired speech should be, for classroom purposes, neither too inclusive nor too exclusive. As much harm is done by having speech standards that are too high as by having standards that are too low. A teacher's ears, so to speak, can be too long or too short. She can pay too much attention to a child's speech or too little. A good general rule to follow is that a difference to *be* a difference has to *make* a difference. The main purposes of speech are satisfying self-expression and effective communication. If a child is achieving these purposes passably well, then to a reasonable listener his speech does not present a problem in any very important sense, regardless of how he speaks. On the other hand, if he could plainly achieve these purposes more fully with improved speech, there is something to be gained by him through remedial speech instruction.

Generally speaking, the kinds of speech imperfections described in later chapters are the ones that will be found to "make a difference" in the classroom as well as outside the school.

3. It is important not to confuse speech disorders with certain other types of problems and disabilities. In the case of any particular child, the basic question in this connection is: Is it the child's manner of speaking, as such, that is of chief importance or is the apparent speech difficulty mainly incidental to something else?

There are four major types of answer to this question:

a. The speech difficulty is the main or even the only problem.
b. The speech difficulty is incidental to, or independent of, some other problem but solving the other problem will not remove the speech difficulty completely or in any degree.
c. The speech difficulty is incidental to some other problem and will disappear if the other problem is adequately handled.
d. There is no speech difficulty. Something else has been mistaken for a speech impairment.

Among the other inadequacies that are sometimes confused with speech difficulties, as such, are the following:

a. Improper grammar.
b. Incorrect or colloquial pronunciation and intonation.
c. Substandard ability to read, silently or orally.
d. More or less habitual lack of preparation for class recitations.
e. Certain types of personal and social maladjustment.
f. Mental subnormality.

Speech impairments may be and sometimes are related to these conditions. In some cases, they are found in association with one or more of the conditions listed but are not importantly related to them. They are merely coincidental. For example, a child may lisp and also be given to poor grammar, with little if any relationship existing between the two characteristics Some of these conditions, particularly personality maladjustment or the habitual lack of preparation for class recitation, may be in some cases mainly results of impaired speech, in the sense that a child who

finds speaking embarrassing or demoralizing may seek to avoid speaking situations or become discouraged by classroom humiliations. The resulting maladjustments are made more complex by the youngster's rationalizations in defense of his lack of preparation and of his avoidance of situations in which the other children meet and talk with one another. In still other cases, what is thought to be a speech disorder may not be at all. It sometimes happens that a child is referred to a speech clinic where he is found to have quite normal speech, but is discovered to be having difficulty with reading or to be using language ungrammatically. Saying "ain't" does not represent a speech disorder; saying "ith not" does.

Speech irregularities of certain kinds may be and often are associated with mental subnormality. Changing the speech behavior (assuming this is possible to an important degree) will not, of course, remove the low mentality, which will remain as the fundamental consideration. (In some cases, it is true, the I.Q. may be raised more or less by the marked alleviation of a particularly disabling speech impairment, or by an intensive enrichment of the child's language and speech environment.) Referring a mentally subnormal child to a speech clinician is not anything like a satisfactory solution of his total problem, although remedial speech instruction may be very valuable to him. In any event, the classroom teacher cannot deal as well as she might with a mentally deficient pupil by regarding him simply as a child with a speech disorder.

The fundamental consideration is this: If the related condition is removed, will the speech deficiency clear up? If not, the child needs remedial speech instruction. If the speech is improved, will the other condition clear up? If not, the child plainly needs special attention in addition to speech therapy. The speech condition and the results to be achieved through speech therapy and counseling are to be viewed in relation to the child as a person—interacting with other persons—and to his other problems, needs, and types of training or special care.

From the point of view of the classroom teacher, the following specific questions are to be asked about any particular child:

Does the child have a *speech* deficiency?

Does he need remedial speech instruction *or* some other type of special help?

Does he need remedial speech instruction *and* some other type of special help?

Does he need some other type of special help only?

In view of the answers to these questions, what should the classroom teacher do and what can she do?

What should she avoid doing?

This book contains the types of information needed by the classroom teacher as well as the speech clinician if they are to deal efficiently with these questions separately or in cooperation with each other.

WHAT ARE THE DIFFERENT TYPES OF SPEECH DEFICIENCY OR IMPAIRMENT?

In Chapters Three through Eight the following speech impairments are considered:

1. Misarticulations.
2. Voice disorders.
3. The stuttering problem.
4. Retarded speech development.
5. Aphasia—or, more precisely, the dysphasias.
6. Speech disturbances associated with cleft palate.
7. Speech disturbances associated with cerebral palsy.
8. Speech disturbances associated with impaired hearing.

When a problem arises or is created around the speaker's manner of articulation, one or more of three main forms of *misarticulation* may be observed:

1. Omission of sounds: a speech sound may be more or less habitually omitted, as in saying *pay* for *play*.
2. Distortion of sounds: a particular speech sound may be slighted, articulated too lightly to be heard clearly; a sound may be overarticulated, as in the case of a "whistling" *s;* a sound may be "mushed," as in the case of an *s* that sounds much but not quite like an *sh*.

3. Sound substitution: as in *wun* for *run* (substitution of *w* for *r*), or *thum* for *some* (substitution of *th* for *s*).

A child may make one or more of these types of error. He may make the errors only in articulating one particular sound or two or more sounds. He may misarticulate one sound more severely or consistently than another. He may misarticulate a sound more consistently when it occurs at the beginning, or in the middle, or at the end of a word. He may produce a sound correctly in one word and incorrectly in others.

Errors in articulation may be associated with such organic conditions as missing teeth, misarranged teeth, a high and narrow hard palate, a tongue that is sluggish or too large, and the like. The same errors, however, may and usually do occur in the absence of any such organic irregularity. Even when such conditions are present in some degree they are not necessarily important; they may play little or no part in the improper production of the specific sounds that are affected.

In most school children, misarticulations are not due to organic causes. They may most appropriately be thought of in most cases as having resulted from faulty training or faulty learning. It is to be emphasized that the great majority of these children cannot be helped sufficiently, if at all, to speak better by referring them to dentists or physicians or surgeons, or by giving them tongue exercises. For some, of course, corrective dentistry (orthodontic and prosthedontic procedures) may be helpful and even essential to full speech improvement. Moreover, every child should have adequate dental and medical care. Many children with cleft palates require appropriate surgery. These are, however, considerations that are usually apart from, even when auxiliary to, the main specific need of the children under discussion, insofar as their speech is concerned. They need remedial speech instruction specifically suited to their particular speech characteristics—provided, of course, that their misarticulations are of clinical significance. If a child is making only the errors in articulation to be expected at his age and level of development, then it is the other members of the problem, his main listeners, the ones who are anxious about the child's speech, who need essential information and appropriate counseling.

Most speech impairments dealt with in the schools are of the articulatory type. From 70 to 85 percent of the children instructed by public school clinicians are reported to be involved in problems of articulation. About 50 percent of them, moreover, misarticulate the *s* sound, although many of them also misarticulate other sounds.[17] As has been shown in great detail by Orvis C. Irwin, the process of mastering the correct production of speech sounds can be traced from the birth cry though infancy and well into the later years of childhood.[18] Templin has reviewed and presented data which indicate that at the 3-year level children demonstrate mastery of 90 percent of the vowels and diphthongs, about two-thirds of the consonants, one-half of the two-consonant blends, and one-third of the three-consonant blends. "By 4 years of age approximately 80 percent of correct utterance is attained for consonants, 70 percent for two-consonant blends, and 60 percent for three-consonant blends; at 6 years of age, 90, 80 and 70 percent; and by 7 all are at the 90 percent level. . . . In the cross-sectional study at 8 years only 14 out of the 176 sound elements measured were not uttered correctly by at least 90 percent of the children."[19]

On the basis of experience in the schools, there is fairly general agreement that 2 to 3 percent of elementary school children make serious articulatory errors, and another 2 to 3 percent present less severe misarticulations which are generally considered to require special attention. Some of these, perhaps, as well as another 3 to 5 percent would profit from general speech improvement programs as distinguished from clinical or remedial speech services;

[17] Available data on speech sound articulation by children of both sexes at specified age levels, as compiled and evaluated by Darley, are to be found in Wendell Johnson, Frederic L. Darley, and D. C. Spriestersbach, *Diagnostic Methods in Speech Pathology* (New York: Harper & Row, 1963), pp. 80–110.

[18] Irwin has published a substantial series of reports on his studies of speech sound development during infancy. Many of these reports are to be found in the *Journal of Speech and Hearing Disorders*. One that summarizes many of the main findings and indicates the effects of such factors as age, sex, race, intelligence, brain damage, and so forth, is "Speech Development in the Young Child: 2. Some Factors Related to the Speech Development of the Infant and Young Child," *ibid.* (1952), *17*:269–279. See also Irwin, "Infant Speech," *Scientific American* (1949), *181*:22–25.

[19] Mildred C. Templin, "Speech Development in the Young Child: 3. The Development of Certain Language Skills in Children," *Journal of Speech and Hearing Disorders* (1952), *17*:280–285.

their imperfections are developmental or are comparatively mild or inconsequential for most ordinary purposes.[20]

Disorders of voice are mainly classified in terms of the primary attributes of voice. These are pitch, loudness, and quality. Pitch can be too high, too low, or monotonous. The voice may be too loud, too weak, or monotonous with respect to loudness. The chief quality deviations are nasality, hoarseness, harshness, and breathiness. Chronic voice disturbances are not very common among school children.[21] The so-called change of voice occasions some difficulty, of course, at roughly the junior high school level and beyond. Many of the voice difficulties in children are associated with the common cold, laryngitis, or enlarged adenoids.

Stuttering is, from many points of view, the most challenging of all speech problems, not only to the speech clinician but also to the classroom teacher. It has been said that

> Stuttering is a problem in which many factors and many persons interact in complex ways. It is a problem that involves not only a speaker but his listeners as well. Indeed, it may be said with peculiar validity that in the beginning stuttering is not so much a problem for the speaker, who is nearly always a small child, as it is for his most important listeners, who are nearly always his parents. After the child takes on the problem he makes it more and more a part of himself as he grows older with it; it remains a kind of trouble he shares with those around him who never abandon their investment in it—and each newcomer borrows from him that part of it which serves his own need to be responsive to the stutterer's distress.
>
> In order, then, to evaluate the problem of stuttering you need to give attention to how the one who is said to be the stutterer speaks, and to what he says about the way he speaks, and to the feelings he has because of it and because of what he tells himself about it. You need to find out also what his listeners say about his mode of speaking and how they feel about it. And you need to discover where and when the speaker does what he and the others take to be his stuttering, and what they do because he does these things at the times and in the places where he does them, and what he does because they do what they do.[22]

[20] Geraldine Garrison, Darley, Hilda F. Amidon, and Verna A. Breinholt, "Speech Improvement," in *Public School Speech and Hearing Services, op. cit.*, chap. 7.

[21] Two children per 1,000 is the estimate given by the American Speech and Hearing Association Committee on the Midcentury White House Conference in 1952, *op. cit.*

[22] Johnson, in Johnson, Darley, and Spriestersbach, *op. cit.*, pp. 240–241.

The problem called stuttering has many members. When the speaker involved in the problem is a very young child, it is nearly always true that the most important members are to be found among his listeners—"most important" because through them the way in which the problem develops is largely determined, and through them most can be done to reduce or solve the problem. As a rule, in the beginning it is the mother who is the key member of the problem. The father may also be a very significant member. So may a grandmother, or an older brother or sister. A teacher may be an important, occasionally the most important, member of the problem.

At first the child himself may not seem to be aware that there is any problem because his concern is in learning to talk; he pauses and tries again just as he does in most of his learning. But he gradually comes to sense something vaguely disquieting in the way people listen to him. So he, too, becomes a member of the problem when he has become involved in it to a significant degree. It is to be appreciated especially that he is not merely speaking hesitantly. It is the way he feels about his listeners' reactions to him and how he seems to feel about the way he speaks that are particularly to be understood. Although originally the child hesitates and repeats without apparent tension and concern, if his disfluencies are reacted to negatively by others he gradually comes to appear more tense and concerned about speaking.

That is, at times, when the child speaks to his mother, his teacher, or to a playmate, he seems to be *responding* to this other person hesitantly, with some conflict as to whether to respond or not, or whether to respond in one way or another, and with a degree and kind of tensing that signalizes this conflict and expresses some measure of fear and insecurity with respect to how the other person will react. It is in some such terms that the stuttering child's difficulty is to be appreciated and dealt with, as will be indicated more fully in Chapter Five.

Retarded speech development is best understood with reference to the various aspects of speech in which development can be seen. Most normal children begin to say words, for example, at about the age of 12 to 15 months; a child who has not begun to

speak in simple words by the age of 2 to 3 years needs special attention. Age norms of this kind should not be interpreted strictly; any particular child is not to be compared in his specific accomplishments and characteristics with the *average* child, but in his general range of abilities and tendencies with the *majority* of children. There are not only wide differences among children, but also great variations in the conditions or environments by which children are affected. A sufficiently unfavorable environment can retard the speech development of a definitely normal child.[23]

Among the more common factors which tend to make for delayed speech development are (1) mental subnormality; (2) illness and physical impairment, such as paralyzing conditions; (3) lack of sufficient speech stimulation, as in homes in which no one coos or babbles or chatters to the baby, or at a later age reads to him, or in which the members of the family talk very little among themselves; (4) impaired hearing of a degree sufficient to interfere with the child's ability to recognize clearly the sounds and words and speech patterns to be imitated and learned; (5) inadequate or disturbingly inconsistent rewards—even a certain amount of misplaced punishment—for the child's early attempts at speech. While it is not among the more common factors responsible for retarded speech development, intense shock, fright, or shame, experienced over a sustained period or on one or more crucial occasions, is a possibility which the speech examiner must consider in some cases.[24]

The aspects of speech in which retarded development may be particularly evident are (1) amount of vocalization and babbling during infancy, (2) age at which single words and sentences are first spoken, (3) correctness of articulation of the various speech sounds, (4) general average length of speech response, (5) relative proportions of complete and incomplete responses, (6) relative proportions of egocentric and socialized speech, (7) amount of

[23] Detailed information on speech and language development has been compiled and presented by Darley in Johnson, Darley, and Spriestersbach, *op. cit.*, pp. 80–110 and 160–200.

[24] A review of studies dealing with the relation of emotional and social maladjustment to certain aspects of speech retardation is presented by Dorothea McCarthy in "Language Disorders and Parent-Child Relationships," *Journal of Speech and Hearing Disorders* (1954), *19*:514–523.

speaking, and (8) vocabulary. Retardation with respect to these aspects of speech is a relative matter. According to the American Speech and Hearing Association Committee of the Midcentury White House Conference, three out of every 1,000 school children present retarded speech development.[25]

Dysphasia or, as it has been called traditionally but less precisely, *aphasia,* is the name for a class of varied disorders of language behavior. The term "dysphasia," or "aphasia," is used most consistently to refer to language disorders associated with brain injury or disease. With our rising population, the relative increase in the number of persons at the older ages at which strokes are more likely to occur, the increasing numbers of brain injuries at all ages resulting from traffic accidents and other causes, and improved medical care for stroke patients and the brain-injured, the incidence of dysphasia is increasing and the place of speech therapy and language retraining in the treatment of dysphasia is becoming more and more important. Among children there is a substantial but inexactly known number who, for whatever reasons, are gravely handicapped by language deficiencies and disturbances, often with related emotional and behavior problems, that either are to be classified as dysphasias on the basis of neurological findings or to be regarded as similar to dysphasia. These problems and the controversial question of "congenital aphasia" or "childhood aphasia" will be examined in Chapter Six.

Speech impairments associated with cleft palate and cerebral palsy are to be described in terms of imperfections in voice, articulation, and fluency or rate.[26] In cases of cleft palate the structures which normally form the roof of the mouth have failed to join properly. As a result, air passes freely between the oral and nasal chambers. Moreover, the action of the tongue and the velar and pharyngeal structures, and the associated variations in size and shape of the oral cavity, tend to be influenced in ways that affect

[25] *Op. cit.* A case of retarded speech associated with blindness and cerebral palsy but illustrating several important principles that apply in children not so affected organically is described by George O. Egland in "An Analysis of an Exceptional Case of Retarded Speech," *Journal of Speech and Hearing Disorders* (1954), *19*:239–243.

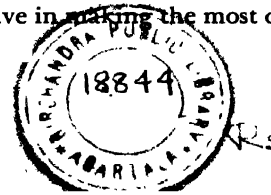
[26] See Spriestersbach, "Speech Problems of Patients with Cleft Lip or Palate," in J. M. Converse (ed.), *Reconstructive Plastic Surgery* (Philadelphia: Saunders, 1964), chap. 41.

speech. The speech tends particularly to be nasalized. There is also difficulty in building up breath pressure for the stop-plosive sounds (*p, b, t, d, k,* and *g*); the effort to produce these sounds may therefore result in what may be called a "nasal snort." Other sounds, too, can be affected, of course.

The cleft may affect only the hard palate; it may be a slight or an extensive cleft. It sometimes extends through the gum ridge at the front of the mouth; it may involve the lip (cleft lip). In some cases it extends back to the soft palate and velum; the soft palate may be short, divided, or absent. Cleft lip is commonly repaired by surgery soon after birth or in early infancy. Surgery is commonly used also to repair clefts of the hard and soft palates. When surgery is inadvisable, impractical, or unsuccessful, appliances called obturators, roughly resembling "false plates," are often used to shut off the nasal from the oral passage. This means that school children with cleft palates may have (1) surgically repaired clefts, (2) unsuccessfully repaired clefts (with or without obturators), and (3) unrepaired clefts (with or without obturators). It has been the general experience in the United States that neither surgical repair of the palate nor an obturator is sufficient, as a rule, to eliminate the imperfection in speech; speech correction is necessary in most cases. Meanwhile, the general adjustment of a child who has a cleft can be importantly affected by the classroom teacher. Roughly one in every 700 children is born with a cleft lip or palate, or both.

Cerebral palsy is a general term which covers a variety of conditions caused by damage to certain areas in the brain. The most common forms are the spastic, the athetotic, and the ataxic (these are explained in Chapter Seven). It is probable that about 500,000 persons in the United States are affected by this condition. Speech is disordered in about 70 percent of cases of cerebral palsy.

In general, the speech of cerebral palsied children is labored, slow, and irregular in fluency; the voice tends to be monotonous and relatively uncontrolled; articulation suffers because of the impaired muscular coordination. Cerebral palsied speech is a problem for the professional speech clinician, but the classroom teacher plays a vital role in determining the opportunities the cerebral palsied child will have in making the most of the training



given him by the remedial speech instructor and by other specialists.

Speech disturbances associated with impaired hearing are revealed chiefly in certain distortions of articulation, voice, rate, and variation in pitch and loudness. The hard of hearing child cannot hear the speech of others well enough to imitate accurately the finer qualities of voice and speech, particularly with respect to intonation and the articulation of certain sounds. Moreover, such a child cannot always hear his own voice sufficiently well to know that he is making particular errors or that he is not controlling his vocal inflections normally. The degree to which speech is affected generally depends upon the manner and degree to which hearing is impaired, and whether the impairment has been present since before, or occurred after, the age when speech would normally have been acquired. The various types of hearing loss, and the practical significance of different degrees of loss, so far as speech is concerned, are discussed in Chapter Eight. Approximately 3 percent of school children have educationally significant hearing losses, and another 5 percent have losses that call for proper medical attention; this may affect speech in some cases.

These are the speech and voice disorders with which this book is concerned—and it is concerned with them from the special point of view of the general classroom teacher and of the remedial speech specialist who works as her teammate.

WHAT ARE REMEDIAL SPEECH SERVICES?

In general, a remedial speech specialist examines, appraises, and diagnoses the speech, voice, and language behavior of children and adults who experience difficulty with these functions, and provides remedial services for them according to their respective needs. In the United States most speech correction work is carried on in the elementary and secondary schools. It is also done in hospitals, of course—including government hospitals—and in mental hygiene clinics, child guidance clinics, psychological clinics, and community speech and hearing clinics. There are also private speech clinics. Today most of the larger universities and

colleges maintain speech clinics. These university clinics not only provide student and community remedial speech services but also serve as professional training and research centers.

Speech pathology has developed in response to a growing realization of the impressive incidence of speech disturbances, the seriousness of their effects, the degree to which they are remediable, and the fact that none of the other established professions is prepared to deal with them either comprehensively or specifically. As a profession it has drawn for its special needs from the biological, behavioral, and social sciences, from mathematics, the physics of sound, and more specifically from anatomy, physiology, neurology, education, phonetics, general semantics, scientific linguistics, general speech science, and the psychology of learning and of personal adjustment. Within this framework, speech pathologists have developed new investigative and scientific procedures with which to amass a growing body of knowledge and theory concerning communicative behavior and its disorders. This knowledge and theory form the basis of the practical art of diagnostic and remedial speech services.

The qualifications of a speech specialist, in the present sense, can be described in a particularly meaningful way in terms of the clinical certification regulations of the American Speech and Hearing Association, the recognized organization of scientists, teachers, and clinicians in this field.[27]

Members of the Association may apply for clinical certification, that is, for the Certificate of Clinical Competence. Members who have made distinguished scientific, clinical, and professional contributions may be nominated and elected to the class of Fellow. Membership in the American Speech and Hearing Association and certification by it have come to be recognized generally as basic evidence of professional qualification for clinical work in the field. Public school remedial speech specialists must also hold proper certification credentials from their respective state departments of public instruction.

In general, the remedial speech specialist in a school system serves as supervisor and consultant as well as teacher and clinician. It is his responsibility to identify, through referrals or by suitable

[27] See *1965 Directory, op. cit.*, pp. xxiii–xxvii.

survey or examination procedures, those pupils who are in need of remedial speech services. Having found them, he divides them into groups according to type and severity of problem and with reference to grade level. Those whose problems can be dealt with adequately by their classroom teachers are left in their regular classes; the speech specialist, of course, confers with each child's teacher, explains his speech difficulty, describes and demonstrates the special procedures and policies that are indicated, and arranges for periodic review of the problem. The children who require the personal attention of the speech specialist are divided into two general groups: those who must be given individual therapy and those who can or should be handled in small classes, grouped according to similarities in age, grade level, and type of speech problem. The groups may overlap, of course; a particular child may be given both individual and group therapy or instruction.

The speech clinician or specialist coordinates his schedule of meetings for these children with the general school program and works at all times in close cooperation with the pupils' classroom teachers. It is also essential or desirable in many cases that he counsel the parents and be instrumental in obtaining for certain children the medical, dental, psychological, or other types of special attention they may require.

All this means that the classroom teacher can be most helpful to the speech handicapped children in her classroom by working in cooperation with the speech clinician, if there is one in the school system. This book is so constructed that the teacher can get from the chapter dealing with a particular type of speech problem the information that will be especially helpful in working with the speech specialist. For the teacher who is on her own, with no speech clinician available, the attempt is made in each chapter to provide the kind of information particularly useful in such a situation.

It is tremendously encouraging to learn of the extremely effective ways in which many teachers have dealt with speech handicapped children in their classrooms. Such teachers and their constructive work come to the attention of remedial speech workers regularly in all parts of the country. A case which il-

lustrates very well what can be done, even by a beginning teacher in a rural school, and with a difficult problem, was communicated to the authors by Mrs. Frances Riecken, formerly of the Minneapolis Public Schools, and, before that, speech clinician for the Crippled Children's Services in Minnesota.

In the course of her state-wide activities Mrs. Riecken was informed by a county nurse that one of the rural teachers in her county wished to have her see a 13-year-old stuttering boy. The teacher had emphasized—and this is important—that she would prefer to have the appointment at a time when she might accompany the boy. She was not "sending him"; she wanted to "bring him." A day was set for the conference and advance arrangements were made for the county nurse to obtain a brief case history by interviewing the boy, his parents, and the teacher. The nurse reported back to Mrs. Riecken that in her judgment it would indeed be desirable to make sure that the teacher accompany the boy to the conference because she had found her most cooperative.

The nurse had known the boy's previous teacher and described her as an unfriendly sort of person with many unrecognized and unsolved personal problems of her own. At the close of the previous school year the boy had expressed the wish that he could suddenly become 16 years old so he "could leave school for good." The new teacher, inexperienced and just out of teachers' college, had been patient and kind from the start. Her friendliness toward all the children had been evident to the nurse during her visit to the school. It was of special significance that she had assigned certain nonspeech duties to the boy who stuttered. He kept the blackboards washed and did two or three other such tasks—"not too many," as the teacher put it, "but enough to make him feel that he was doing the sort of things the others were doing and that what he did was important."

The new teacher had been in the school about three months. Already the boy was responding in a decidedly wholesome way to her positive approach. He was even arriving at school earlier than usual and was willing to stay late in order to improve his work. His parents reported that he was asking them to help him with his studies at home, whereas formerly he had never done

this. In fact, the year before there had been many days when they had had to insist that he go to school.

After the conference with Mrs. Riecken the teacher continued to encourage and help the boy in every way she could. His stuttering—his apprehensiveness, hesitating, and tensing in speaking—in the classroom was markedly less. It was Mrs. Riecken's considered professional judgment that the improvement in speech itself was largely due to the teacher's warm, human feeling for all her pupils. She did not "cure" the boy's stuttering, of course; no informed and reasonable person would have expected such a result. She did, however, contribute to a worthwhile improvement in his speech and gave him a strong desire to continue his schooling. By doing so she reduced his handicap greatly and made life much richer for him than it would have been without her understanding and friendly encouragement. This young rural teacher was not a speech clinician and did not pretend to be one but what she was able to do, just by being the kind of teacher she was, added up to a very large share of all that could have been accomplished by a good remedial speech specialist.

Another inspiring story is related by Miss Jacqueline Keaster, one of the authors of this book. As speech clinician for the Davenport, Iowa, schools a number of years ago, Miss Keaster was called on the second day of school one September by the principal of one of the junior high schools. He told her about a new pupil, Evelyn, a transfer from a country school, who had almost unintelligible speech. The story is best told in Miss Keaster's own words:

> He wanted me to come immediately. I found a tall, thin 13-year-old girl with what appeared to be a severe functional articulation disorder. All of the consonants were distorted to a greater or lesser degree. The speech was almost impossible to understand. The girl appeared to be intelligent—her grades from the country school were higher than average—and this impression was later borne out by objective tests. The principal of the school in which Evelyn was now enrolled was extremely interested in her problem. His interest was contagious. All of her classroom teachers became interested and asked how they could help. The girl herself reacted by becoming highly motivated in her desire to improve her speech.
>
> Throughout her grade school career this youngster had kept up by

writing everything—she was different from the others. Her feeling of being different permeated her whole being. She walked with her head down, her shoulders slumped. She didn't know how to chatter and laugh with other girls. Mr. R., the principal, called in the president of the Girl Reserves and asked her to see that Evelyn was invited to join. The physical education instructor helped her with game skills at noon and after school. Her fellow students were helped to an awareness of the problem in such a way that it was not infrequent for a student, a stranger to me, to stop me in the hall to report with some pride on one of Evelyn's accomplishments. During all of this she was correcting on an average of one sound every two weeks—by sheer hard work.

Her head came up, her shoulders straightened. By the cooperative efforts of an entire junior high school a transformation was brought about.

Evelyn went to the big senior high school the next fall and took a course in fundamentals of speech with a teacher who was willing to let it be a practice hour for the fixing of new speech habits.

Three years later she graduated among the top 10 in the class of more than 300—a girl who had not wanted to come to high school because of her poor speech, but who continued her education because of the understanding helpfulness of a school principal who inspired all her teachers and even her classmates by his human feeling for Evelyn's difficulties and his respect for her as a person. He knew where to turn for help, but he also knew that there was more to the problem than the mere correction of specific speech sounds. To him Evelyn was not just a "speech defective" or a "problem child." She was a young girl, unhappy and handicapped, in whose drawn face and averted eyes he saw the potential smile and sparkle of an attractive woman. It was an exciting experience to be one of the team of teachers and school children that formed spontaneously under this principal's compelling leadership to win the game with Evelyn.

The meaning and the place of "remedial speech services" in the school and classroom "come alive" in stories such as these, and are further indicated throughout this book.

What makes your throat feel a little tighter as you read the story of Evelyn is not only the heartening resurrection of a handicapped and demoralized young girl, but also the magnificent bonus of the ennoblement of the other children and of the teachers who had no speech problems of their own. In helping Evelyn to hold up her head, they too became a little taller. The

story dramatizes the most important fact of all: it is as good to be helpful as it is to be helped.

There is unsuspected but profound tragedy in the fact that the schools that do not have needed special services for their handicapped children are depriving all their other pupils of the finest character education they could ever know.

As we leave the story of Evelyn behind and move ahead the richer for it, we must remind ourselves, of course, that the classroom teacher cannot be expected to undertake time consuming tasks on behalf of individual pupils which would distract her attention from her main job. What the classroom teacher may find practical and desirable to do from a remedial speech point of view, however, need be neither time consuming nor distracting, as the representative instances sketched above so clearly show. For the greater part what is to be recommended is a philosophy of teaching, a classroom atmosphere, general instructional methods, and a few simple things to be done in the course of the classroom routine, or as time can be "made" for them, most of which will be beneficial not only to the children with speech difficulties but to all the other pupils as well. It cannot be emphasized too strongly that the kind of classroom or school or teacher that is good for a child who stutters or lisps is good for all the other children too.

In Chapter Two more detailed consideration will be given to the place of remedial speech services in the classroom—or, better perhaps, the place of the classroom and of the classroom teacher in remedial speech services.

TWO



THE CLINICAL POINT OF VIEW IN EDUCATION

Inherent in the philosophy of democracy is the doctrine that every child is entitled to an education to the limit of his capacity. . . . The education of exceptional children represents an attempt on the part of the school to furnish equal opportunity to individuals who differ in physical, mental, and social characteristics. . . .

The objectives of the education of exceptional children . . . do not differ from the general objectives of education for all children. Exceptional children, like others, must become well-adjusted members of the family and the community, must participate in the activities of the workaday world, and must assume responsibilities in keeping with their capacities as citizens in a democracy.[1]

The basic policies and objectives of education for exceptional children, including those handicapped in speech, are well stated

[1] Samuel Kirk, chairman, and Committee on the Education of Exceptional Children, Henry B. Nelson (ed.), *The Education of Exceptional Children*, Forty-ninth Yearbook of the National Society for the Study of Education, Part II (Chicago: University of Chicago Press, 1950), pp. 3–4.

in this pronouncement of a national committee of educational leaders. Remedial speech services are likely to be most effective in schools and in individual classrooms in which the democratic educational philosophy so crisply expressed by these educational statesmen is brought to life by teachers who understand it and believe in it. It is precisely this philosophy that is applied in clinics by those clinicians who know most clearly what they are doing and why they are doing it. So it turns out that just as an educational point of view is becoming to a clinician, so a clinical point of view can make more gracious and fruitful the efforts of a teacher.

A BIT OF HISTORY

While the number of children who need remedial speech services still exceeds by far the number of those who are receiving them, the development in this field in recent years has been impressive and it is instructive to inquire into the reasons for this and into its more important consequences. In the beginnings of special education, it was indeed thought of as special and the children for whom it was intended were decidedly regarded as exceptional. The first significant work of this kind was done, in fact, not in the regular schools but in special institutions, such as the American School for the Deaf, a private agency, established in 1817 in Hartford, Connecticut. Public philosophy with regard to the relevant responsibilities of the schools underwent a gradual change. In two recent publications of the U.S. Office of Education, the change is described this way:

> Toward the latter part of the nineteenth century there were some efforts to educate exceptional children in local communities, but most of these were somewhat experimental. Such special educational projects were usually undertaken by, or in cooperation with, private agencies, and encouraged educators to enlarge their concept of the function of the school to include the handicapped. . . .
>
> It was not until the beginning of the present century that public school systems began to assume responsibility for atypical children in any organized fashion. Even as late as 1920, little was done by local school systems except in a few of the larger cities. These efforts were

mainly on behalf of the crippled, the partially seeing, the mentally retarded, and the socially maladjusted. As the values of these day school programs became recognized, special classes and services were added for the hard-of-hearing, the speech handicapped, and for children with cardiac and other special health problems. Some cities inaugurated day school classes for the blind and the deaf, and a few local schools began experimenting with special classes for the gifted. . . .[2]

The 1957–58 statistical findings show clearly that education of exceptional children has become a large movement within American education. Special education is no longer confined to large city school systems and residential institutions, but has penetrated into more than 3,600 local public school systems and nearly 600 residential schools of all sizes. It reaches at least some children and youth in every State of the Union. Opportunity for special education appears to be available to only about one in every four exceptional children who need it. Nevertheless, the findings suggest that there is increasingly wide public acceptance—perhaps even demand—for the program.[3]

Among the major factors responsible for the increasing public attention to the needs of the handicapped are to be listed the influence of organized religion in modern times, the rise of the scientific method and outlook, and the revolutionary movements of the past two centuries—still continuing—that have fostered democratic principles of government and a corresponding official respect and concern for the common man and for the children of the common people.

One of the most fundamental effects of the rise of democracy has been the phenomenal expansion of our systems of public education as such. Medicine has changed and expanded greatly under the impact of scientific method and our modern conceptions of public health have made a definite impression on policies and practices in school administration. Stressing the fundamental importance of due regard for health in relation to education, a notable publication of the United States Office of Education

[2] Romaine P. Mackie and Lloyd M. Dunn, *State Certification Requirements for Teachers of Exceptional Children*, bulletin 1, Office of Education, U.S. Department of Health, Education, and Welfare, 1954, p. 3.

[3] Mackie, Harold M. Williams, Patricia R. Hunter, *Statistics of Special Education for Exceptional Children and Youth, 1957–58* (Biennial Survey of Education in the United States, 1956–1958), Office of Education, U.S. Department of Health, Education, and Welfare, 1963, p. 18.

contains these statements: "Basic to all the other needs . . . desirable and essential for secondary-school-age youth is health. . . . Physical, mental, and emotional health are the very warp and woof of satisfactory home and family life, and the expressed rights and privileges of citizenship are little more than hollow platitudes unless the individual is fit to defend and enjoy them."[4]

An increasingly systematic school health program could lead only to a heightened appreciation of the problems and the potentialities of children requiring medical attention. Added to this was the fact that since the last two decades of the nineteenth century, when Sigmund Freud and William James, Ivan Pavlov, E. L. Thorndike, and other scientific investigators of human behavior laid the foundations of modern psychology and psychiatry, there has been a steady increase in public enlightenment with respect to mental, emotional, and behavioral problems, particularly those of children. One of the specific consequences of the advances made in the behavioral sciences has been the introduction of diagnostic testing programs in our schools. "With the increased development and use of educational statistics, testing techniques, and community surveys, schoolmen learned more about the significance of individual differences, rate of maturation, and rate of learning. They learned that psychological and social endowments were not the same for all, and realized the folly of treating children and youth as if these differences did not exist."[5]

Tyler and Brownell, writing about individualized instruction, make the point that human variability is not only real, inevitable, ineradicable, and desirable, but "indeed essential. Nothing less than uniform acceptance of these facts and full recognition of their implications for education and for society will suffice even as a start toward the individualization of instruction.

[4] Galen Jones and Raymond W. Gregory, *Life Adjustment Education for Every Youth*, bulletin 22, Office of Education, Federal Security Agency, 1951, p. 70. For a discussion of the historical relationship between speech pathology and medicine, see Charles R. Strother, "Trends in Speech Pathology," *Quarterly Journal of Speech* (1943), 29:76–80, and, for later developments, reports in *Asha* (1960), 2:Raymond Carhart, 99–102, and Isaac P. Brackett, 181–184.

[5] Benjamin C. Willis, chairman, and Commission of Life Adjustment Education for Youth, *Vitalizing Secondary Education*, bulletin 3, Office of Education, Federal Security Agency, 1951, p. 9.

Human diversity is a key to social progress and a challenge to better education."[6]

Moreover, in the past two generations or so, we have become more and more conscious of the wonders and the hazards of human language and speech, largely through the influence of the new and vigorous college and university programs in speech and the burgeoning of the means of communication since Alexander Graham Bell's epochal invention of the telephone in 1875 and the more recent fantastic developments in radio, sound photography, electronic recording, and television. The science of communication is rapidly becoming one of the most exciting, comprehensive, sophisticated, and socially important of all our many scientific disciplines, and such recently popularized strange words as "cybernetics," "semantics," and "feedback" are coming to be part of our common vocabulary.[7] There is today a widespread consciousness of speech and language behavior that is indeed new under the sun, and one of the most important aspects of it is our heightened awareness of speech and language disorders and our

[6] Fred T. Tyler and William A. Brownell, in *Individualizing Instruction*, National Society for the Study of Education, Sixty-first Yearbook, Part I (Chicago: University of Chicago Press, 1962), pp. 326–327. Two relevant sound films that might be of interest are "Each Child Is Different" (47 minutes) and "Discovering Individual Differences" (25 minutes), available from McGraw-Hill, Inc., 330 West 42nd Street, New York, N.Y. 10036.

[7] The literature concerned with these matters is becoming relatively vast; the following references provide orientation to the field: Wilbur Schramm (ed.), *The Science of Human Communication* (New York: Basic Books, 1963); George A. Miller, *Language and Communication* (New York: McGraw-Hill, 1951); John W. Black and Wilbur E. Moore, *Speech: Code, Meaning and Communication* (New York: McGraw-Hill, 1955); Stuart Chase, *Power of Words* (New York: Harcourt, Brace, 1954); S. I. Hayakawa, *Language in Thought and Action* (New York: Harcourt, Brace, 1949); J. Z. Young, *Doubt and Certainty in Science* (New York: Oxford University Press, 1960); Wendell Johnson, *People in Quandaries: The Semantics of Personal Adjustment* (New York: Harper & Row, 1946), and *Your Most Enchanted Listener* (New York: Harper & Row, 1956). For a comprehensive historical treatment of the field of speech in its various aspects see Karl R. Wallace (ed.), *History of Speech Education in America* (New York: Appleton-Century-Crofts, 1954); see particularly Gladys L. Borchers and Lillian R. Wagner, "Speech Education in Nineteenth-Century Schools," chap. 13; James F. Curtis, "The Rise of Experimental Phonetics," chap. 16; Clarence T. Simon, "Development of Education in Speech and Hearing to 1920," chap. 18; Halbert E. Gulley and Hugh Seabury, "Speech Education in Twentieth Century Public Schools," chap. 21. The beginnings of speech correction in the public schools are delineated in Paul Moore and Dorothy G. Kester, "Historical Notes on Speech Correction in the Pre-Association Era," *Journal of Speech and Hearing Disorders* (1953), *18*:48–53.

general acceptance of the view that the study and treatment of these disorders are matters of very important individual and public concern.

This list of factors is by no means exhaustive, but it does serve to suggest the very great substantiality of the philosophical, scientific, political, and social trends that have given rise to special education in general and to speech pathology in particular, as we know them today. Special education is no longer as "special" as it used to be, and exceptional children are far less "exceptional" than they once were. Professor Samuel Kirk and his committee have said of the so-called exceptional child that he

> has fundamental motives and drives common to children in general; but along with those common characteristics there is in each case a specific handicap or exceptional condition that requires an adjustment or special service in his educational program. That program should be designed with full recognition of (a) his likeness to normal children and (b) his special needs. This, in brief, constitutes the modern approach to the education of exceptional children.[8]

The rise of special education has had a great influence on our entire educational program. Professor Kirk and his associates have put it this way:

> All children in a school system profit from the special services provided for exceptional children. . . . Some pioneer educators, such as Montessori, Decroly, and Horace Mann, who began their educational work with exceptional children, found that the techniques which they developed were of great advantage to others. The activity movement, for example, in which it was emphasized that the mentally defective could learn best through doing, was later advocated as a general educational procedure. Programs for exceptional children have thus provided laboratory situations leading to the development of new philosophies and methods, which in many cases have a universal school application.[9]

We may sum up many of the "philosophies and methods" that special education has contributed to our educational system as a whole in what we may call the clinical point of view in education—the point of view that each child is an individual, interacting necessarily with other individuals, and that the best educa-

[8] *Education of Exceptional Children, op. cit.*, p. 10.
[9] *Ibid.*, pp. 5–6.

tion for him is one which strives constructively to adapt the school to his individuality in the process of training him to adjust his individuality in creative ways to the school.

A dynamic concept of personality and adjustment is embodied in this philosophy of education, a concept that has grown out of the experience of workers in special education, psychology, social work, speech pathology, and other clinical or related fields. It is distinctive of the clinical approach that it brings the individual human being into sharp focus, and that in doing so it tends always to lead to the crucial revelation that the individual has essential relationships with other persons. We have learned that we can best serve a speech handicapped child not by placing him in a program that isolates him from his peers, but by training him always with a clear recognition of the fact that speaking is something that he must do to and with others, and that through speech he must *relate himself* as an individual to others. The clinical point of view, as it pervades our schools, fosters an emphasis upon the differences that make each child a distinctive personality and upon the social settings or contexts—the patterns of interpersonal relationships—in which these individual differences come alive with meaning.

Most children with speech handicaps profit from working in groups, even though they must be examined and evaluated one by one—and no two will ever turn out to be the same. It is beneficial for a speech impaired child to share his experiences with others, to gain perspective from forming relationships with other children who have problems more or less similar to or very different from his own—and with those who may seem to him to have no problems at all. He gains motivation to improve by sharing the morale of the group and by contributing to it. And the naturalness of the speaking experiences that come about in group work and in normal school situations is a factor that contributes to the carryover of improvement achieved in the school or clinic into everyday speaking experiences in home and neighborhood.

Examination procedures and certain aspects of treatment or remedial speech instruction must always be individualized. More and more, however, speech therapy is emerging from its cubicle to become integrated with the general school program. It is being

carried beyond the school and into the home where speech problems nearly always begin and where many of the reasons for their persistence are to be found. Remedial speech instruction is becoming more "lifelike"—and so is education generally—more slowly than some would wish, more rapidly than others would prefer. One of the many reasons for this is that speech clinicians and other special teachers in the schools, from the time of Horace Mann to our own day, have inevitably demonstrated—simply by serving each exceptional child as best they could—that what is good for the exceptional youngster is nearly always good for all the other children too.

As the future historian of education evaluates all this, he is likely to conclude that the most important consequence of "the rise of the handicapped child" was that it had a good effect on the schools themselves. It is good for teachers to be good to individual youngsters, not only because it is good for the children but also because it is good for the teachers. The handicapped child has done the entire educational system the great service of stimulating his teachers to be good to him—and of persuading them into the bargain that what is good for him is good for all their other pupils as well. The way to be a good teacher of arithmetic is to be a good teacher for the child who, for some special reason, finds arithmetic extremely difficult. The way to conduct oral work in social studies so that none of the pupils will suffer stage fright and all will benefit as fully as possible is to conduct it so that even a stuttering pupil can be at ease and enjoy his own part in the discussion.

One of the most essential requirements for effective teaching of this sort is sufficient knowledge about the problem in which a particular child is involved—nearly always along with his parents and classmates and teachers, who are all members of the problem —and about the physical equipment and the personality of the child around whom the problem centers. This book is about the problems of children whose difficulties lie peculiarly in their speech, and so we shall begin, in the remaining pages of this chapter, to apply the clinical point of view in the education of speech handicapped children by presenting essential information about speech and its impairments, and about the interaction

between speech impairments and personality characteristics. In the light of this information, the types of school policies, teaching procedures, and teacher-child relationships that are good for speech handicapped children and that are bad for them, will be discussed. In relation to the rest of the book, this is the chapter that deals with "the common denominator" in the responsibilities and opportunities of the classroom teacher in ministering to the needs of children with speech difficulties. It is this "common denominator" that speech pathology as a profession has to contribute to the advancement of education for all our children—in a kind of evercontinuing reinvestment in the indispensable good that the grand community of the school contributes to the well-being of speech handicapped children.

PHYSIOLOGICAL ASPECTS OF SPEECH

There are no speech organs One of the basic facts that helps us to appreciate the hazards to which speech is subject is that there are no organs of speech as such.[10] Each of the organs used for speech serves other functions with which speech has to compete. Under certain conditions it competes at a disadvantage. You can appreciate this clearly if you will try to carry on a conversation while lifting one end of a heavy desk. An important function of the vocal cords or folds is that of assisting in maintaining breath pressure in the chest cavity during the act of lifting or similar types of muscular exertion. In performing this function the vocal folds come together, or close, and while they are in this position it is not possible to use them for producing vocal tones for speech.

The vocal folds also serve to keep foreign material out of the lungs. That is why one cannot speak and swallow at the same time; during swallowing the vocal folds come together and thus keep the liquid or food being swallowed from going down the "windpipe," or trachea. Likewise, while coughing, hiccoughing, and retching it is practically true that one has no "voice box"; the vocal folds are simply not functioning at such times as *vocal*

[10] Classic statements of this general point of view are to be found in Lee Edward Travis, *Speech Pathology* (New York: Appleton, 1931), and in Edward Sapir, *Language* (New York: Harcourt, Brace, 1921).

folds—as a mechanism for producing speech tones; in a literal sense, an essential part of one's so-called speech mechanism is functionally missing. Since these nonspeech functions are more vital biologically than speech, it is only when they are not being performed that the vocal folds and the related parts of the tone-producing mechanism are available for purposes of speech.

What is true in this sense of the vocal folds is true also of the organs of breathing, the lungs, diaphragm, muscles of the chest walls, and nasal passages. Breathing and the vitalizing functions which it serves are more important than talking, insofar as the life processes of the human body are concerned. This explains why we are able to speak only in a meager fashion or not at all while sneezing, yawning, sighing, gasping for air, or breathing deeply as a result of vigorous exercises. No one is a good conversationalist during a two-mile run.

Moreover, the lips, tongue, teeth, cheek muscles, soft palate, and muscles of the throat were not designed primarily for speech. We use them for speaking only when they are not otherwise engaged. These bodily parts are decidedly engaged when, for example, the infant is feeding or the adult is taking a drink of water. During such acts there is, for the moment, no *vocal* mechanism or *speech* organs.

Practical implications Most of the time, of course, we get along so well speaking with "borrowed tools" that we are not conscious of any problems arising from this circumstance. Occasionally we may be dimly aware of being frustrated in talking at the dinner table, particularly when the main dish is Italian spaghetti or unboned fish, but we seldom, if ever, become reflective about it. As bedtime nears it sometimes becomes difficult to read aloud, but for the most part we take yawning for granted and think nothing of it.

There are some important considerations in this connection, however. One of them is that good speech development depends in part upon normally vigorous sucking and chewing activities during infancy and early childhood. An implication of this fact, perhaps of minor significance in the classroom, is that occasionally the speech specialist advises a child to chew gum in order

to strengthen tongue and jaw muscles that have not been sufficiently exercised. In fact, the use of chewing exercises in certain aspects of speech therapy has been developed by Froeschels and Jellinek[11] and by Palmer[12] to a degree that is likely to seem surprising to one who has never considered the possible relationships between chewing and speaking.

A further practical consideration is that the interests of good speech are served by the dental hygiene programs in our schools. True, the only teeth that are extremely important for speech are the two upper front ones (provided enough of the others are also present), but the general alignment of the teeth, and especially the position of the upper front teeth in relation to the lower front teeth, are of some significance. Good chewing habits plus adequate dental care are urged in the interests of proper speech development.

Another point of some interest is that vigorous crying during infancy is not without value. The weak, passive baby whose voice never rises above a whimper is getting off to a slow start in generating the vocal potential and the lung power needed in a modern auditorium.

Breathing exercises were at one time taken for granted as an important part of almost any clinical speech procedure, and although they have been largely abandoned so far as most types of cases are concerned, the part played by normal respiration in good speech is not to be ignored. In certain types of voice training, breathing exercises are commonly used. Most children, including speech handicapped children, breathe normally but occasionally one encounters a child whose breathing is "shallow," or jerky, or otherwise unsuitable for the demands of sustained normal speech. Teachers sometimes inquire as to the correct manner of breathing. About the only defensible answer is that, while practically

[11] Emil Froeschels and Auguste Jellinek, *Practice of Voice and Speech Therapy* (Boston: Expression Co., 1941).

[12] Martin F. Palmer, "Studies in Clinical Techniques: II Normalization of Chewing, Sucking and Swallowing Reflexes in Cerebral Palsy: A Home Program," *Journal of Speech Disorders* (1947), *12*:415–418. See also Harold Westlake and David Rutherford, *Speech Therapy for the Cerebral Palsied* (Chicago: National Society for Crippled Children and Adults, 1961); and Thomas J. Hixon and James C. Hardy, "Restricted Motility of the Speech Articulators in Cerebral Palsy," *Journal of Speech and Hearing Disorders* (1964), *29*:293–306.

everyone "breathes with" the diaphragm *and* the chest, nevertheless, so far as a distinction can be made, both "diaphragmatic" and "chest" breathing are normal. Occasionally one finds a child who gives the appearance of being an "upper chest" breather, and usually such a child's breathing habits might advisedly be retrained.[13]

Mouth breathing, ordinarily due to adenoids or other types of nasal obstruction, is in some measure detrimental to good speech habits. It is to be given due attention, of course, for other reasons as well; children who breathe through their mouths to any marked extent should be referred to a physician as a matter of general policy.

The main reason the speech specialist is interested in respiration, however, is that it serves as an index of emotional adjustment to the speaking situation. It is in this connection that we see one of the most important consequences of the fact that there are no speech organs as such. In speaking we are dependent upon the smooth functioning of the breathing mechanism; this mechanism happens to be one of the body's most sensitive indicators of emotion. Perhaps the most striking consequence of this arrangement is to be seen in the common tendency of the stutterer to hold his breath during these moments when his fear of speaking is greatest. The relationship in such a case between the disturbance in breathing and the disturbance in speech is complex, but certainly one gains some appreciation of what is happening from a knowledge of the fact that the organs which the stutterer is using for speech are, in part, designed basically for respiration. How well they serve for purposes of speech at a moment of emotional disturbance depends, therefore, on how their vital function, respiration, is affected by the emotional disturbance. Most of us are sufficiently poised during most of our speaking to show no important vocal effects of such minor breathing disturbances as may occur. In cases of excessive shyness, stage fright, or stutter-

13 For current information and views on breathing in relation to speech and voice see Virgil Anderson, *Improving the Child's Speech* (New York: Oxford University Press, 1953), and *Training the Speaking Voice* (New York: Oxford University Press, 1942); Friedrich S. Brodnitz, *Keep Your Voice Healthy* (New York: Harper & Row, 1953); and Grant Fairbanks, *Voice and Articulation Drillbook,* 2nd ed. (New York: Harper & Row, 1960). This subject is discussed further in Chapter Four.

ing, however, the vocal effects are sometimes striking, since the emotional reactions and the consequent breathing disturbances are so marked. In cases of cerebral palsy or other conditions involving paralysis or incoordination, the vocal effects of emotionally caused breathing disturbances are aggravated. It is in dealing with such cases that one realizes most clearly the practical significance of the dependence of the speech function on organs which serve primarily other and generally more vital and "assertive" bodily processes.

SPEECH AS LEARNED BEHAVIOR

Children must learn to speak Another basic consideration is that speech is a form of behavior that has to be learned. The learning of it is part and parcel of the child's general acquisition of behavior patterns.

It is assumed that students using this textbook have studied the learning process in at least a general psychology course and that most of them will take additional courses in psychology in which learning theory will be further developed. You can refresh your memory and perhaps expand your knowledge of the learning process somewhat by means of such books as those of Hilgard; Skinner; Holland and Skinner; Kendler; and Kimble and Garmezy.[14] Meanwhile, we shall focus briefly on some of the more important considerations of the learning process as it affects speech and speech disorders.

An intriguing hypothesis of the learning of speech by the child is presented by Mowrer.[15] Comparing the "speech learning" of "talking birds" and human babies, he stresses the role of the

[14] Ernest R. Hilgard, *Theories of Learning*, 2nd ed. (New York: Appleton-Century-Crofts, 1956); B. F. Skinner, *Science and Human Behavior* (New York Macmillan, 1953); James G. Holland and B. F. Skinner, *The Analysis of Behavior: A Program for Self-Instruction* (New York: McGraw-Hill, 1961); Howard H. Kendler, *Basic Psychology* (New York: Appleton-Century-Crofts, 1963); and Gregory A. Kimble and Norman Garmezy, *Principles of General Psychology*, 2nd ed. (New York: Ronald, 1963).

[15] Orval H. Mowrer, *Learning Theory and Personality Dynamics* (New York: Ronald, 1950), chap. 23 and 24, particularly pp. 685–687 and 698–700. For two charming books on speech development, addressed to lay readers, especially parents, see Charles Van Riper's *Teaching Your Child to Talk* (New York: Harper & Row, 1950), and *Your Child's Speech Problems* (New York: Harper & Row, 1961).

association of sounds spoken by a kindly trainer or affectionate parent, as the case may be, with feeding or other comforting and pleasant experiences. Given this fundamental association the baby (or bird) tends, in Mowrer's view, to find satisfaction in producing the sounds associated with pleasure. Mowrer stresses the probable importance of imitation *by the parent* of sounds uttered by the baby as a factor in stimulating further vocalization and also as an influence in leading the infant to approximate more and more closely the standard speech sounds of the parents. In this hypothesis Mowrer combines features of the classical conditioning of Pavlov, the association learning of Thorndike, and the operant conditioning of Skinner, all of which are discussed by Hilgard and by other writers, of course. This view of speech learning emphasizes the effects of the parents' responding positively to the baby's sound-making and of their making sounds for him to imitate; by clear implication, therefore, it points up the negative and unfortunate effects of the lack of adequate parental response. The baby's speech development can be delayed, sometimes very seriously, by a "strong silent" father or a preoccupied or disenchanted mother who neither listens nor speaks to the cooing infant, who, in consequence, coos less and less as time silently passes for him.

According to Skinner's theory of operant conditioning, it is the consequences for the infant of his vocalizing that determines how his sound-making behavior is "shaped."[16] In Skinner's view of the learning process, "shaping" refers to the changes the individual makes in his behavior in response to the effects of that behavior. For example if when the baby produces "muh" the mother smiles and pats him lovingly, or in some other way positively reinforces the "muh," the baby will be more likely to produce "muh" again rather than one of the many other sound patterns more or less like it. Now, since as Irwin[17] has reported, babies do half or more of their first-year vocalizing in repetitive patterns, if the mother

16 *Op. cit.*

17 Orvis C. Irwin, "Speech Development in the Young Child: 2. Some Factors Related to the Speech Development of the Infant and Young Child," *Journal of Speech and Hearing Disorders* (1952), *17*:269–279. See also Harris Winitz, "Repetitions in the Vocalizations and Speech of Children in the First Two Years of Life," in *Studies of Speech Disfluency and Rate of Stutterers and Nonstutterers*, monograph 7, *Journal of Speech and Hearing Disorders*, 1961.

is patient and alert she will sooner or later observe her baby uttering something like "muh muh." If she reinforces this particular vocalization with smiles and cuddles, she will "shape" the infant's sound-making behavior another step in the direction of "mama." When, after a series of such "shapings," the baby produces a reasonably clear "mama," the mother's reinforcement of this vocal miracle, as it will seem to her, is likely to be positive indeed. In fact, it will probably result in long-distance calls to grandparents and letters to old school chums, as well as an excited account to father returning from work. "Marvin has started to talk! He said his first word!" And so Marvin's "mama" and any other recognizable approximations to words will be reinforced and progressively shaped not just by mother, but by grandparents and uncles and aunts and neighbors and any old friends and new strangers who happen along at the time. In other words, the baby's own vocal activities or responses operate in such a way as to stimulate responses by his listeners, which in turn operate to encourage, not mere recurrences of identical responses by the baby, but closer and closer approximations to the responses that the reinforcing operators (the parents, for example) find to be most reinforcing for themselves. Learning, that is, appears as a cooperative experience; mother reinforces and shapes baby's behavior and—or, indeed, because—what baby does reinforces and shape's mother's behavior. So while mother is "teaching" baby to talk, baby is "teaching" mother to "teach" baby to talk.

One should not get the impression that every mother does all this consciously. In fact, those rare sophisticated ones who do it consciously, after reading one of Professor Skinner's books perhaps, may very well do it less effectively than would a wholehearted naive mother who delights in what she does indeed regard as the miracle of her baby's "speech," and who reinforces with unthinking spontaneity the cooings and babblings of her baby that are wild music to her ears—provided, of course, that she is more pleased by, and so reinforces more positively and strongly, the baby's utterances that come closer and closer to sounding like the words of her language. Otherwise, she may reinforce approximations so strongly that the baby continues to produce them, and so he learns to say words with some of the sounds missing (articu-

latory omissions), or with wrong sounds instead of right ones (articulatory substitutions), or with the right sounds made improperly (distortions such as a whistling *s*, for example).

What happens in most real life situations amounts to a combination of the learning processes hypothesized by Mowrer and Skinner—and with at least two factors more or less conspicuously emphasized. One of these is what in speech therapy is called auditory stimulation or ear training, or what is referred to by some learning theorists and neurologists as modeling. The response to it is commonly called imitation. The other factor is punishment or negative reinforcement.

In sketching Mowrer's "talking bird" hypothesis of speech learning we referred to imitation by the parent of sounds made by the baby as a means of encouraging the baby to vocalize. This is one example of auditory stimulation, but it is also more than that, of course. When the baby says "duh uh duh" and the mother leans close with a big smile and says "duh uh duh" to him, this must be, for the baby, a highly effective reward over and above any "auditory stimulation" it involves. And in this connection it is very important that we recognize the desirability of a proper balance between reward or reinforcement of the baby's sounds and the shaping of them in Skinner's sense of that word. If the mother and others do nothing but faithfully imitate for the baby the sounds that he produces, he is encouraged merely to make the same sounds over and over again instead of learning to speak English or whatever the language of his environment happens to be. At the other extreme, which probably occurs quite often, if those around the baby respond to his immature babbling (which constitutes the best he can do) by speaking only adult language to him, they do very little to shape the baby's sound patterns through a series of approximations increasingly similar to the sound patterns of the language to be learned.

It is extremely important to reinforce or reward the baby's vocalizing; it is better that he make sounds of some sort than none at all. But for the baby to learn readily to *speak* rather than merely to vocalize—to produce what his listeners will recognize as the sounds and words to which they give meaning and to which they respond, therefore, in the ways that are most meaningful to

the child—he must progress by such steps as he can take from what he does to what he can do a little differently, and yet a bit more differently, until he produces a particular word to the satisfaction of those with whom he exchanges the wonderful sounds of self.

Most mothers and fathers, doing "what comes naturally" to them in responding to baby, show some satisfaction when he vocalizes in any speechlike way; but they are clearly the more pleased the closer he comes to forming sounds and words "correctly," and so they tend to provide reinforcement more or less appropriately. When they err, it is likely to be in one of four ways. We have implied that one of these is that of indifference, of not responding, of providing neither essential auditory stimulation nor the needed reinforcement. We have said that the second of these forms of error is that of imitating too faithfully, rather than progressively shaping, the baby's immature sound patterns. The third mistake is that of providing only the generally too-difficult model of adult speech for the baby to imitate. The fourth way to err is to use negative reinforcement, or punishment, at the wrong times or too often and so with unfortunate effects.

There are, regrettably, mothers and fathers with headaches or more substantial reasons for finding the too-long-continued sound-making of a baby irritating, and who show their displeasure in ways that discourage the baby's cooing and babbling—and so his progress in learning speech. Negative reinforcement is probably most likely to occur, however, after the child has learned to speak, at least well enough to keep up what to a tired mother can seem like "continuous chatter"—and, as has been documented for some average 4-year-olds, to ask 400 questions a day! It takes very little capacity for empathy—and sympathy—to understand that what might appear at first unthinking glance to be a problem in speech learning for the child, is in fact a problem of which the mother, too, is a full-fledged member, deserving of all the understanding and help we can bring to her. Such a mother does indeed need help instead of condemnation. In asking her to provide the sort of reinforcement and shaping that will be most conducive to the child's further speech development, we are expecting of her an extraordinary achievement for which she is probably largely un-

prepared. It is hardly likely that she has learned a great deal in school, church, bridge club, or laundromat, or from radio, television, the daily paper, or the weekly and monthly magazine digests—or from her own mother or Aunt Flossie—about the moment-to-moment know-how of responding pleasantly in the most effective ways at the most propitious times with just the right intensity to reinforce most positively those aspects of Marvin's speech behavior that should be reinforced—all the while being alert to those other things Marvin is doing when he talks that should either be ignored and not rewarded or unmistakably discouraged. It would be a bold, or unconventionally imaginative, or thoughtless speech pathologist who would tell such a mother flatly that she is never to use negative reinforcement, or, in a plainer word, punishment in response to anything Marvin ever does while speaking. She is to be encouraged, however, to use it effectively in the interest of good speech learning, and to use it moderately, or no more than seems necessary, depending far more on rewarding Marvin's desirable, or potentially desirable, speech behaviors than on punishing what he does that is undesirable usually because he has not yet learned to do anything better. Nor should we take for granted that, in putting it that way, we have made life easy for the mother. After all, she has not been trained to be a teacher; therefore, we should be patient with the best she can do with the best counseling we can give her, just as we should be patient with the best Marvin can do with the best his mother can do for him with the best we can do for her.

In one way or another children have to learn to speak. Indeed, if a person aspires to become a speaker of artistic distinction, intensive and prolonged training is essential. Meanwhile most children and adults are a bit surprised upon being told that they have *learned* to speak. So long as a child speaks normally and well, it is fortunate that he takes his speech for granted. He has nothing to gain, as we shall see presently, by becoming too speech-conscious. In fact, one of the characteristics of good speech is that, as far as its motor or muscular aspects are concerned, it is spontaneous, practically automatic, and performed with almost no conscious attention to the specific manner in which it is done.

Normal speech is largely automatic One of the fundamental reasons for the relatively automatic nature of the motor aspects of speech is the one we have discussed above: speech is performed with organs designed primarily for other functions. Most of these other functions are reflex-like, or nearly so. Breathing, for example, while subject to some degree of conscious control, is ordinarily something we do without thinking about it. Normally it is practically as automatic during speech as it is at other times. This is obviously a large part of the reason why most of us tend to feel that speech, under ordinary conditions, is "as natural as breathing." It is also an important reason why good speech must be essentially automatic—in order to control speech consciously to any great extent one would have to control breathing consciously to a degree that would tend to make for a definite disturbance in speech.

Another reason why too much speech-consciousness is detrimental is to be seen by watching an X-ray sound film of the speech act.[18] The number of moving parts, the rates of their movements, the variations in these rates from second to second, the complex ways in which the many parts move in relationship to one another, the precise adjustment, and the rapid succession in which they occur, all combine to give one a thoroughly convincing impression that the centipede in walking has nothing on the human being in talking. If one were to stop to figure out whether the larynx should be elevated before the tongue is to be depressed, or vice versa, at any point in saying a simple sentence, one would certainly be as disturbed as would a centipede who paused to reflect on just which leg to lift next in crossing a crack in the sidewalk. The tone-producing mechanism, or larynx, particularly —with the vocal folds vibrating hundreds of times per second, for example—is not something to be operated with any highly conscious "hunt-and-peck" system. The speech organs are best "played by ear," so to speak.

[18] A series of such films, in sound and color, is available (for rental fee) from the Audiovisual Center, University of Iowa, Iowa City, Iowa 52240. The series, called "Physiological Aspects of Speech," was produced by the university's Department of Speech Pathology and Audiology and Department of Otolaryngology and Maxillofacial Surgery, and includes "Velopharyngeal Function in Normal Speakers" (1962); "Speakers with Cleft Palates" (1964); "Aspects of Normal Speech Articulation" (1965); and "Speakers with Cerebral Palsy," scheduled for production (1966).

Even the tongue, jaws, and lips, which are subject to more conscious control than the other so-called speech organs, function best for speech purposes when they work freely along the smoothly worn grooves of habit. Just what do you do with your tongue in saying "Boston, Massachusetts"? If you are an ordinarily good normal speaker, you can't answer this question. That is a substantial part of the reason why you are a good speaker. If you can answer it in any detail the chances are that either you are a speech pathologist or else you need to see one.

The fine details of the speech act, the multitudinous individual muscular movements involved in it, are normally reflex-like for all practical purposes. That is why you can talk in your sleep. In fact, some persons with impaired speech, such as stutterers and certain psychological voice cases, usually talk better in their sleep than they do when they are wide awake. And we all talk better when we are free from self-consciousness, enjoying ourselves with good friends, and paying no attention to *how* we are speaking.

All these considerations, supported by a great mass of scientific data, have one very important implication: in speech training and speech therapy the goal is good speech that is habitual, automatic, and spontaneous. It is all right, it is frequently essential, and indeed very important to be highly conscious of *what* one says, but it is most desirable to be as unconscious as possible of *how* one says it. In working with speech disorders, and in certain details of the training of normal or artistic speech, it is necessary for the speaker to attend closely to how a sound or a word or a certain vocal inflection is best produced, but this is only a means to an end. The end, or goal, is speech in which the basic breathing, phonating, and articulating activities are almost completely automatic.

Two common misconceptions In view of what has been said, we can more fully appreciate the significance of two common misconceptions regarding speech training and speech correction. The one is seen in the frequently heard exhortation that people should become more speech-conscious. Parents are often urged to become more speech-conscious, and so are teachers, and they are earnestly advised to make their children or pupils more speech-conscious. It is a term that can lead to policies in the home and

in the classroom that can have very undesirable effects. Speech-consciousness can be a particularly harmful form of self-consciousness. To be aware of one's language, one's words, to watch what one says, to strive for effective verbal statements that are accurate, dependable, and constructive or pleasing in their effects is one thing, and most commendable. To be acutely conscious of the motor aspects of one's speech, one's breathing, phonating, and articulating activities, to attend intently to them, and to try everlastingly to "control" them is definitely something else again. It is advisable to make children language-conscious. This is practically essential to their good judgment, moral character, and even their sanity. It is not advisable to make children highly speech-conscious except in some cases, for specific remedial purposes, as a means to an end, and under professional supervision.

This suggests the other common misconception. It is that speech improvement requires "control." Such expressions as "breath control," "voice control," and "speech control" are probably tossed about too thoughtlessly for the public good. What we probably mean, as a rule, by "speech control"—the production of clear, understandable, pleasing speech—is best achieved indirectly. One can best learn to speak well not by trying directly to regulate every articulatory movement, but by cultivating a discriminating ear, a desire to communicate, and a proper attitude toward the listener.[19] Genefally speaking, the less we know about our soft palates, for example, the better—unless we are physicians, speech pathologists, or persons with cleft palates learning to direct sound out through the mouth instead of the nose.

The importance of reward and practice With these words of essential information and caution, we may now give further attention to the fact that speech is a form of behavior that has to be learned. As we have previously indicated, we learn best to do

[19] Robert L. Milisen has developed a theory of speech learning (similar in many respects to the one presented in these pages) which has contributed its influence to the thinking represented in the present text. See particularly Milisen's opening chapter, "A Rationale for Articulation Disorders," in Milisen and Associates, *The Disorder of Articulation: A Systematic Clinical and Experimental Approach,* monograph 4, *Journal of Speech and Hearing Disorders,* 1954.

those things that are most rewarded, or, as Skinner and other present-day psychologists would prefer to say, reinforced.[20] Part of the reason for this is that the more they are rewarded or reinforced the more we do them; the more we do them—practice them, that is—the better we learn them. The kinds of behavior that are most satisfying to us are, therefore, the ones we are most likely to persist in cultivating. For our present purposes this suggests that the most important rule in speech training is that speaking should be fun; it should bring desired or valued results; it should prove to be enjoyable and worth doing. If speech is made satisfying and rewarding for a child, he will like speaking and will do more of it than he would otherwise.

The amount of speaking a child does is the first concern of the teacher or clinician who is interested in his speech development. The babies who show the most rapid speech development are the ones who coo and babble the most, and who are the most rewarded for it by parental smiles and fondling—and cooing. The old idea that children should be seen and not heard is certainly contrary to the best principles of speech training. It is a fairly reliable rule that superior adult speakers not only like to talk because they are good at it, but what is more important, they are good at it and tend to get better at it because they enjoy talking. The more they enjoy it, the more they practice it. The teacher who wants to encourage a child to improve his speech will do everything she can, therefore, to get him to talk as much as possible and to make the speaking he does thoroughly enjoyable and profitable for him.

There are certain things that such a teacher will be careful to do and not to do. She will not criticize a pupil's speech in such a way as to embarrass him. In case of doubt, she will give him a smile, a friendly pat, or a word of praise for the speaking he does. Instead of putting her threatening finger on the things he does incorrectly or poorly, she will single out something in his recitation or in his manner of speaking that she can commend. "Gold stars" are much better than "black marks" for the purpose of stimulating interest in improving the performances for which they are received. This is especially true for the child who does

[20] *Op. cit.*

not excel or who is deficient in speech. Even at best, he is not likely to get the enjoyment from speaking that he needs in order to have sufficient motivation for improvement. He is likely to be rather quiet, to refrain from asking questions, and to make his answers brief—even to say "I don't know" when he does know, in order to avoid talking. This is indeed a common classroom response of stutterers.

One of the first signs of success in speech therapy, and almost always an important one, is an increase in the talkativeness of the child. It is not important that this increased speech be clear and distinct, or fluent. One of our own cases was a young boy—we shall call him Jerry—who hardly spoke at all when he first came to the clinic. He was not only silent but seemed to have a generalized fear of people, and these two facts were definitely related. The only important objective during the first few weeks was to get Jerry to talk—jabber would be a better word—since it was almost impossible to understand anything he did say. We were delighted when he finally began to flood the clinic with his chatter; the fact that we were unable to make head or tail of it didn't matter in the least at that stage. We wanted him to enjoy his chattering, and we were generous to a point just safely short of absurdity in our praise, compliments, smiles, and eager desires to hear more. We were simply applying the principle of reinforcement, which psychologists have so abundantly demonstrated to be essential to learning, to encourage Jerry to talk as much as he would the way he could. Until we got Jerry to speak, there was simply no speech on which to work. When we did get him to the point where he was speaking and enjoying it sufficiently, it was possible to proceed with the systematic correction of his errors.

What is good for the handicapped is good for the "normal"

This sort of case serves the purposes of a microscope, as it were. It is not always easy to see the value of generously rewarding the attempts which children make to share their feelings. to seek and give information, and to establish good relationships with others through speech. In Jerry, however, the crying need for such reward was so striking that hardly anyone could have missed it. Moreover, the demoralizing effects of criticism, demerits, rebuke,

and rejection often go almost entirely unnoticed when seen in the children whom we glibly call "normal." The effects, as Jerry showed them, were not only clear but pathetic. And the important thing to notice as we look through the "microscope" which the Jerrys provide for us is that the kind of criticism that is bad for them and the kind of rewards that are good for them are also in some degree bad and good, respectively, for all other children. Much of the "special" attention we give, or should give, to speech handicapped children should be given also to the pupils who do not have speech disorders.

As has been pointed out by Professor Lee Edward Travis, one of the "founding fathers" of the profession of speech pathology, it is curious that parents who have been advised to improve the psychological care of their children frequently react by asking how soon they can go back to treating their children "normally"! Just as many of us tend to look upon a healthful diet as a form of "medical treatment," so all too often we feel somehow that the psychological practices that make for enriching personal development are something "special," to be used only during crises or with "exceptional" children or adults. Generally speaking, the best physical hygiene measures, the best mental health practices, and the best educational methods have been developed in the interests of the sick, the maladjusted, and the handicapped; we have been slower than need be in making them fully available to everyone.

It is particularly important to heed the obvious lesson that these remarks are intended to point up as we consider a bewildering problem, one that has dogged our efforts to work out adequate educational programs for the handicapped. All too often any attempt to single out the hard of hearing, the "behavior problem" children, or the speech handicapped, in order to give them the care and training they need, has resulted in their being stigmatized or "socially branded" as different in some unsavory sense. It happens to be true that we can sometimes do as much harm by applying derogatory labels to children as we can by outright physical attempts to maim them; and the most painstaking care, ethics, and tact are to be expected of those who make surveys of the handicapped children in our schools. At the same time, some

children are caught up in, are members of, speech problems or problems of other kinds, and we are neither wise nor kind in pretending that they are not. One of the most sound and practical ways—if not the only way—to avoid stigmatizing them is to apply to all children the same good principles of physical and mental hygiene, and of education, that are now in many instances reserved for the handicapped. After all, it is as difficult to defend the point of view that the handicapped should be treated better than the so-called normal children as it is to uphold the proposition that they should be treated worse. There is no more reason for confining the best educational practices to "special rooms" than for restricting the best foods to hospitals.

The importance of "classroom democracy" In order to create the sort of classroom atmosphere that will encourage speech and make it enjoyable, a certain degree of warmth and good cheer and informality is clearly essential. It is a cardinal principle, which child psychologists and speech pathologists long ago learned to take for granted, that one must establish good rapport with a child before anything can be accomplished with him so far as retraining is concerned. What is meant by "good rapport" is mainly a good relationship between teacher, or clinician, and child. If a teacher is unable to get children to like her, it doesn't matter a great deal how much she knows about the technical aspects of her craft. She simply has to be the sort of person to whom children respond warmly and eagerly. Children must love to be with her, to talk to her, to work with her. To say that a teacher is the sort of person to whom children react in such ways is to say that she establishes good rapport with her pupils; teachers of this kind are friendly and rather informal with children. (The same statements are to be made, of course, about speech clinicians.)

This does not mean at all that they are frivolous, or lax in classroom management, or that they waste time and let the pupils get out of hand. Children like to have rules so long as they are administered justly—and set aside or amended when it would be unfair to enforce them as they stand—especially if they have a voice in making them. They like clear instructions. They want to know rather definitely what is to be expected of them. But, of

course, they also want to know "why" and "what for." There is nothing more exciting and satisfying to them than learning, unless they have been seriously conditioned against it. All of which means that there is genuine tragedy in a dull lesson, or the frivolous, or even well-intentioned waste of school time, or a classroom to which children go with dread.

A famous program of studies carried out in the Institute of Child Behavior and Development, University of Iowa, showed that children preferred and learned better in a democratic atmosphere than in either an autocratic or a *laissez-faire* atmosphere.[21] When the teacher was strict and dictatorial they became sullen, resentful, and discouraged; they worked more slowly, and when the teacher was out of the room or when her back was turned they quit working. When, as in the *laissez-faire* program, the teacher played an utterly passive role and followed an "anything goes, do as you please" policy, the children indulged in horseplay, picked on each other, and didn't accomplish much. It was the democratic teacher who got the best results—as determined by this research in which teachers and pupils were taken into the laboratory and subjected to scientific study. The democratic teacher was friendly, but she was there to instruct. The pupils were allowed a certain leeway in what they were to do and how they were to do it, but the teacher took a lively interest in what they did, told them the best ways to do it, showed them, worked with them, shared their pleasures in accomplishment, sympathized with their disappointments, enjoyed their jokes, helped them understand their mistakes, did not gloss over her own errors, and complimented them for their successes. She was, as the language of adolescents used to have it, a "good Joe"—or perhaps the word these days is "cool." Discipline was almost completely taken care of by the strong sense of fair play generated by the compelling morale of a group working together with a democratic leader whom they appreciated and liked. Seldom, if ever, have the basic principles of good teaching been more dramatically or convincingly demonstrated.

Again, the *general* value of these policies is to be appreciated. The point is that while these are good principles to follow in providing a classroom atmosphere favorable for speech handi-

[21] R. Ronald Lippitt, *An Experimental Study of the Effect of Democratic and Authoritarian Group Atmospheres*, in *University of Iowa Studies in Child Welfare, 16*, no. 3 (1940).

capped pupils, they are to be recommended just as urgently on behalf of all other school children. It is only one of their many benefits that they make for the sort of classroom atmosphere that encourages speaking and makes it enjoyable. This specific value, however, is our main concern here.

Oral recitation and classroom discussion Any speaking that children do in classrooms, everything from roll call to book reports, is of special importance in this connection.[22] Should pupils with impaired speech be excused from oral recitations? Should special allowances be made for them with regard to oral work, and if so, what sort of allowances should be made? What are the arguments in favor of their full participation in oral work?

There appear to be two basic answers to all these questions. They have been emphasized in the preceding discussion. The first is that speech handicapped pupils should be encouraged to speak as much as possible. The other is that the speaking they do should be made worth while and satisfying and as enjoyable as possible. These are general statements; some elaboration is in order.

We should take into consideration that all youngsters caught up in speech problems are not alike. Their individual needs and abilities should be taken into account. Two facts about the stuttering problem, for example, are of outstanding importance in connection with oral work. The first is that a stuttering child is especially likely to hesitate with apprehension and to exert effort (in order to "make himself" speak when he would rather not) whenever he is required to say a specific word, such as "present,"

[22] It is not merely roll call as such to which attention is to be directed here. On such special occasions as the first day of school, or in the checking of committee members, the assigning of children to cars or buses for picnics or excursions, and so forth, teachers sometimes require children to give their names or respond in some way when their names are called. Stutterers and hard-of-hearing children, especially, may find this distressing or may present the teacher in charge with momentary difficulties. Obviously, if a deafened child does not answer roll, it is essential to realize that he may not have heard. From the point of view of a stutterer who is particularly bothered by his speech difficulty, any method of "silent roll taking" is vastly different from a method requiring him to respond orally if he is greatly disturbed by severe stuttering in trying to say his name. It is desirable, of course, under proper conditions and in good time, to help such a child to achieve the poise and maturity that will make it possible for him to meet experiences like these calmly and graciously. Meanwhile, there are times when a teacher's capacity for being perceptive of a child's limitations, even his momentary incapacities, is to be exercised. The treatment of stuttering is discussed in Chapter Five.

or "Washington," or his own name, to a person in authority (a teacher), with a premium on promptness, in the presence of an audience, and under such conditions that failure to respond properly is more or less embarrassing. The behavior we call stuttering is not performed at random; it happens more often in attempting to say certain words or sounds, or in speaking to particular listeners, or in certain situations; that is, it is behavior that becomes more or less conditioned to particular cues or stimuli.

Because of the conditions under which roll call is answered, for example, stuttering behavior is especially likely to become associated with the attempt to say "present" or "here" or whatever word is customary. If by chance the pupils are required to say their own names, as perhaps they might be on the opening day of school, the difficulty is aggravated, since most stutterers have been conditioned by experience to be especially embarrassed by hesitancy or delay in saying their own names. Adult stutterers have actually been known to go through the legal procedure of changing their names. It doesn't help long.

The other fact to be especially noted about stuttering behavior in this connection is that it involves a special kind of anxiety or uneasiness. One of the important things about anxiety is that it tends to mount under conditions of suspense. Fiction writers make the most of this fact, of course. The well-worn stories about expectant fathers illustrate the point elaborately. Now, one of the reasons why reciting in certain classrooms is so distressing to many stutterers is simply that it proceeds alphabetically, and the farther down the list from "A" the stutterer's name comes, the longer he has to worry about whether or not he will be able to answer. The longer he worries, the greater his doubts and fears become, and the more likely he is to hesitate and tense up when his name finally is called. Be understanding of the stuttering child whose name begins with "Z"!

It should be realized that some stutterers have little or no difficulty under such conditions; no two stutterers are alike in detail, and the individual differences among them not only are very great but, in the absence of adequate information, appear at times to be contradictory and illogical as well. Any pupil who

stutters or who has another kind of impaired speech should participate in classroom speaking if he can do so with a reasonable degree of ease and comfort; even if he speaks with much distress, he may prefer to make the attempt or he may be influenced in wholesome ways to make it. For those who require them, certain modifications in procedure can be made. These are presented in the following section.

Modifications of oral recitation and classroom discussion

First, a rough distinction is to be made between short and long speaking performances. Practically all children with speech disturbances or deviations can give "yes" and "no" answers; even in the most extreme cases such an answer can be given by a proper movement of the head. Actually, this is very important, because one of the chief motivations any pupil has for preparing his lessons is the desire to be able to respond properly if called upon to recite. This motivation holds good even if the child—a tense stutterer or a child severely handicapped by cerebral palsy, for example—knows that all he will ever have to do in class is give yes and no answers, orally if he possibly can, of course, but at least by head gestures. To excuse such a child *completely* from responding in class, as is sometimes done, is to remove one of his prime reasons for studying. Moreover, it is a policy hardly calculated to improve his speech; we shall see in the chapter on stuttering why it tends to increase the severity of this particular speech disorder. The difficulties that might sometimes arise because other children notice and react to the fact that the speech handicapped child does not recite as much as they do or that he recites in ways that are different, are part and parcel of his over-all problem of classroom adjustment; these children, as well as the teacher and the child himself, are all members of the problem. This problem is treated from many angles throughout this chapter.

To the extent that a child's participation in class discussion is reduced, he should be given opportunities whenever possible to make up for it. Such opportunities are to be found in written work, blackboard exercises, and map drill, to select obvious examples. In such classes as shop, art, music, and physical training there is usually little difficulty in getting speech handicapped

pupils to participate fully in class activities, since bodily or manual performance is stressed much more heavily than speech. The general principle to be emphasized is that of encouraging participation in the classroom program. This should include as much oral recitation as is wise for any specific child, and any reduction in it should be made up in other ways.

Although practically all speech handicapped pupils can do something insofar as short recitations are concerned, some of them may find longer speech performances more or less impractical. For some, they will be too upsetting or distressing to be advisable. In others, speech may be so unintelligible that their oral book reports, for example, may not accomplish any significant purpose for them or for the rest of the class. If there is a speech clinician in the school system it will be his objective to prepare such children for fuller participation in oral classwork, either by improving their speech sufficiently or by training them to speak in ways that involve less emotional turmoil; meanwhile, allowances should be made in some cases with respect to longer types of oral activity.

Practical adjustments of longer oral performances for speech handicapped pupils are the following:

1. The pupil may be entirely excused from longer oral activities. This is not advisable except in definitely exceptional cases. When it is done, the policy should be regarded as a temporary expedient and everything possible should be done to prepare the pupil to speak or read aloud at least a little in the classroom. In some cases this must be done chiefly through speech therapy and the special kinds of counseling that a speech clinician can provide. In other instances it is primarily a matter of helping the child to achieve a less disturbed reaction to the speaking situations which confront him in the classroom. Possible changes in general classroom management are to be considered as well as particular measures that might be attempted with the individual pupil. Possible measures will be discussed in the next section of this chapter. In any case, when the pupil is completely excused from longer oral recitations, he should be permitted to do additional written work, notebook exercises, outside reading, and the like, to maintain his interest and to permit him to demonstrate his ability to learn.

2. The pupil may be excused only from certain types of speak-

ing or oral reading. The best example for which this could be a practical policy is the stuttering pupil who is greatly disturbed by having to read aloud but does much better in giving an oral report or vice versa. As has been pointed out previously, stutterers differ in ways that sometimes seem puzzling. Some of them can read aloud with little or no difficulty; some find oral reading especially distressing; others can recite memorized material easily; still others stutter with unusual severity in reciting memorized material. It is essential, therefore, that the teacher talk freely and fully with the pupil and find out whether any types of speaking or reading are especially easy or difficult for him. If there are, some feasible plan of oral recitation usually can be arranged that will serve to avoid undesirable ordeals while providing as much beneficial speaking experience as possible for the stutterer. By making the most of his relatively successful speaking, rewarding him well for it, it is often possible to give the pupil sufficient self-confidence to enable him to attempt with decreased dread and discomfort the types of speaking that are more difficult for him.

3. The pupil may be asked to participate in all oral work, although with the reasonable provision that he may make such modifications of the usual procedure as seem advisable or advantageous for him. These modifications will fall generally into three classifications.

a. *Topic.* It is usually a dependable rule that a speech handicapped youngster will speak better when talking about a subject he understands well and likes than when talking "over his head" or about something he is reluctant to discuss, either because he is not interested in it or because it makes him feel "silly" or "out of character." It is extremely important that, insofar as possible, topics be not too rigidly assigned for class discussion, speeches, and reports. When one topic for a theme is assigned to all the pupils in a class, and the themes are to be read aloud, there is a fair chance that any speech handicapped pupils in the group will be distressed more than if given some freedom of choice in selecting their topics. This will tend to be true for the other pupils, too, of course. It is desirable, as has been stressed, that the speaking or oral reading done by a speech handicapped child be made as enjoyable as possible. One obvious way to make speech experiences enjoy-

able for a child is to allow him to choose subjects about which he enjoys speaking. There is a clear advantage, therefore, in encouraging pupils to choose subjects according to this principle—or to assign topics with an eye to each pupil's individual interests. If interests are encouraged they grow and broaden; they can be directed considerably into related areas if the proper rewards are skillfully used. Thus, advantages are gained not only from a speech standpoint but also from a broad educational point of view.

Especially where it can be done in cooperation with an experienced speech clinician, much can be accomplished in certain cases by having the pupil give a report or two on the subject of his own speech problem. In some colleges and universities, it is rather common practice for speech handicapped students, particularly stutterers, to make short speeches before the various sections of the public speaking or the communication skills courses, the introductory psychology course, and the beginning course in speech pathology. They describe their own speech problems, giving important items of personal history, explaining the clinical work they are doing, and in general discussing their speech differences and experiences and their feelings about them in ways that result in a more objective and understanding attitude on the part of other students and the instructors—and of themselves, of course. This is simply part of the total program of training designed to make them more frank and objective about their problems. The result tends to better personal and social adjustment and a more effective attack on speech improvement as such.

We have had high school stutterers also make personal talks of this kind at appropriate times in some of their classes. A good time for this is when other pupils are reporting on their hobbies or special projects in which they are engaged. The topic, "How I Spent the Summer," gives the speech handicapped pupil a chance to tell about the summer speech clinic he attended—if he was so fortunate. Themes to be read aloud sometimes provide good opportunities.

The method was used very effectively with one of our cases, a girl, who had a slight lisp. Actually the lisp was hardly noticeable, but the girl was overly sensitive about her speech. It proved very

beneficial to her to write a short paper in which she described her speech difference in objective terms, recounted frankly some of the unsatisfactory ways in which she had reacted personally to it, and told about the remedial speech work she was doing in an effort to overcome it and to modify her poor adjustment to speaking situations. She began by reading the paper aloud a few times to her speech clinician. Then she read it to a small group of students in the clinic with whom she had much in common. After that she read it to a class of university students. The reactions she got from her listeners were those of interest and acceptance. In the process she gained a more mature perspective and a much better understanding of her lisp and her previous reactions to it. As a result, she worked on its modification in a more businesslike manner and came through the entire experience with significantly improved speech and a more adequate personality.

Such a procedure represents considerably more, of course, than the mere selection of a particular topic—one's own problem—for a theme or speech. It amounts to a forthright application of mental hygiene principles to problems centering around a speech difficulty and carried out in actual speaking situations. Professor Bryng Bryngelson, of the University of Minnesota, has developed this general type of approach to the problems of the speech handicapped in many significant ways and often with gratifying results.[23] It is used in one form or another and in various degrees of elaboration by many speech clinicians.[24] It is one rather substantial remedial speech procedure that can be adapted at least in limited ways to many classroom situations.

[23] Bryng Bryngelson, *Personality Development through Speech* (Minneapolis: Denison, 1965).

[24] See especially Ollie Backus and Jane Beasley, *Speech Therapy with Children* (Boston: Houghton Mifflin, 1951); and Robert F. Hejna, *Speech Disorders and Nondirective Therapy; Client-Centered Counseling and Play Therapy* (New York: Ronald, 1960). See also, in Dominick A. Barbara (ed.), *New Directions in Stuttering* (Springfield, Ill.: Thomas, 1965), the contributions of Eugene B. Cooper, "An Inquiry into the Use of Interpersonal Communication as a Source for Therapy with Stutterers," chap. 5; Edwin W. Martin, Louise M. Ward, and T. Earle Johnson, "The Self as a Central Concept in Speech Therapy for the Person Who Stutters," chap. 6; Ruth Milburn Clark and Frederick Pemberton Murray, "Alterations in Self-Concept: A Barometer of Progress in Individuals Undergoing Therapy for Stuttering," chap. 7; and Barbara, "An Experiment into the Team Approach to Group Psychotherapy with Stutterers," chap. 8.

The classroom teacher is to be cautioned, however, that the technique is not always as simple as it may seem. One would never attempt it with a pupil before getting to know him well and establishing good rapport. Ideally, the teacher should have the cooperation, and preferably the supervision, of a speech clinician, although every public school speech specialist might not care to use the procedure. In any event, the teacher should arrange for the pupil to give the speech to her alone before delivering it to the class. This will give her an opportunity to judge the child's reaction to the assignment, and it will permit the pupil to get used to the experience before appearing before the group. In case of doubt, the assignment should not be made. The spirit of frankness and friendly understanding which the project is designed to foster, however, is to be cultivated by the teacher, as well as by the speech handicapped pupil, in all the ways that seem practical. This point will be elaborated later in the discussion of speech in relation to personality.

b. *Reduction in Length of Oral Performances.* One of the obvious modifications of the usual recitation routine is that of arranging for the pupil with a speech problem to speak for a shorter period of time than is customary for the others. This is often a good practice in helping some speech handicapped children to undertake certain kinds of oral activity which they have previously avoided. It is better for them to make a brief current events report, for example, than to say nothing at all. Later, after they have become used to making a particular type of performance, it may be feasible to increase the length of it.

c. *Manner of Participating in Oral Work.* It has already been remarked that a certain degree of informality in the classroom is desirable. This is especially important so far as speech activities are concerned. A child who would dread standing at the front of the room to make a speech according to prescribed rules of formal delivery might have no hesitancy in saying something spontaneously in the course of an informal class discussion. Such informal and spontaneous discussion is much better from the speech handicapped youngster's point of view than more sedate and regulated recitation and discussion procedures.

Most pupils, particularly if they have speech problems, are

likely to speak more often and enjoy it more, if they can remain seated. If they are asked to stand, they feel less conspicuous standing beside their desks than in front of the class. And if they are required to speak from the front of the room, they usually feel better standing in front of the platform (if there is one) than on it. Moreover, most of them prefer some freedom in moving about to standing perfectly still. Modern teachers of public speaking place heavy emphasis on naturalness and conversational ease. Fortunately, what used to be known as "elocution" has fallen into disrepute. Children should be informed early and fully that making a book report, for example, has nothing whatever to do with "oratory." A conversational manner should be encouraged in all oral work, including the types pupils think of as "making a speech." Good speakers talk *with,* not *at,* their listeners.

Insofar as possible, in the interests of pupils for whom speaking is difficult or unnerving, emphasis should be placed on informal, casual, spontaneous, conversational speech in the classroom. Where hand-raising can be dispensed with, there will almost always be advantages in discouraging it. In quizzing, an irregular, rather than an alphabetical, order in calling on pupils is usually advisable and if the quizzing can be broken up a bit with some give-and-take discussion, it is all to the good. Letting children volunteer answers is nearly always a better general practice than encouraging them to refrain from speaking unless called upon. Allowing the pupils to remain seated during recitations and discussions and to assume comfortable postures (short of slouching, of course) are recommendations that are usually sound—although training in the more formal types of speaking and oral reading is by no means to be entirely neglected.

Running through all these suggestions is the fundamental implication that the teacher's own speech manner is tremendously important. If she speaks with friendly ease, conversing with her pupils rather more than lecturing at them—or talking past them, to use the late Professor Irving Lee's apt phrase[25]—exploring with

[25] Irving J. Lee, *How to Talk with People* (New York: Harper & Row, 1952). In this book the author reports the problems he observed in 200 meetings of boards and committees and presents practical suggestions for dealing with such problems. It is a very enlightening book for any teacher and a fascinating one for anyone interested in human communication generally.

them the subjects they are studying rather than simply telling them or quizzing them, the children will learn much about good speech from her example. Speech will become for them more and more a pleasant and stimulating sharing of experience—which is speech at its best.

The school environment and speech development To what extent does a child's speech improve merely as a result of school attendance?

One of the most pointed answers to this question—although admittedly it is not the whole answer—is given by the findings of Roe and Milisen in a study made of nearly 2,000 children in the first six grades in nine Indiana cities and towns.[26] There was no remedial speech program in any of the schools surveyed. The speech development noted was presumably due to school attendance, plus any effects of increasing age or "maturation." Only one aspect of speech was studied, that of articulation. The consonant sounds and many consonant blends were tested. The number of articulation errors made on the test by the average child in each of the first six grades was as follows: first, 13.3; second, 10; third, 8.9; fourth, 7.6; fifth, 7.6; sixth, 8.

Upon entering first grade the average child makes a considerable number of errors in producing English speech sounds. If he misarticulates every sound included in the Roe and Milisen test (in the initial, medial, and final positions in the word), he makes 66 errors. The average child in the above study made approximately 13 errors; he articulated incorrectly roughly 20 percent of the time. This does not mean that the average first-grader presents a speech disorder; in this situation we may reasonably regard the average as normal.

[26] Vivian Roe and Milisen, "Effect of Maturation upon Defective Articulation in Elementary Grades," *Journal of Speech Disorders* (1942), *7*:37–50. See also Helen K. Sayler, "The Effect of Maturation upon Defective Articulation in Grades Seven through Twelve," *Journal of Speech and Hearing Disorders* (1949), *14*:202–207; Mildred C. Templin, "Research on Articulation Development," *Journal of Nursery Education* (1964), *19*:106–114; Duane C. Spriestersbach and James F. Curtis, "Misarticulation and Discrimination of Speech Sounds," *The Quarterly Journal of Speech* (1951), *37*:483–491; and Darley, "Testing Articulation," in Wendell Johnson, Frederic L. Darley, and Spriestersbach, *Diagnostic Methods in Speech Pathology* (New York: Harper & Row, 1963), particularly tables 14, 15, and 16, and supporting text, pp. 81–84.

A good deal of improvement occurs in the articulation of speech sounds between the first and second grades, according to the study by Roe and Milisen. There is less improvement between the second and third grades, and very little between the third and fourth. For practical purposes, there is no improvement after the fourth grade (in the absence of a remedial speech program). It is possible, of course, that the children surveyed by Roe and Milisen would have shown just as much speech development if they had never gone to school. The investigation was not designed to show whether the improvement was due to school attendance as such. Roe and Milisen did not rule out the factor of "maturation." It is probably safe to assume, however, that the enriched speech environment provided by the school had some effect.

Nevertheless, considering the amount of improvement that *could have occurred,* the amount that *did occur,* and the fact that virtually no improvement was evident after the fourth grade, we may best view the findings from this study as evidence of an opportunity that we may take advantage of even more fully than we have in the past. Speech does improve in the school environment during the early grades, especially the first grade, even when presumably no special attention is given to it. This is encouraging. Under more favorable conditions for speech learning, it should improve still more. There is no good reason why it should not continue to improve beyond the fourth grade. After all, speech therapy produces gratifying results right up through high school and into college and adult age levels. There is no age at which learning must stop, and this holds for speech as well as for other kinds of behavior or skill.

Indeed, we may take much encouragement from the data reported by Roe and Milisen. If the schools can do as well as the data indicate even "without trying," surely a great deal more can be accomplished if we put our minds to it and provide in the fullest possible measure the stimulation, the rewards, and the opportunities that make for more and better speech learning.

Milisen summarizes 20 years of clinical experience and laboratory research in the following basic concept concerning articulatory disorders:

> It makes no difference whether the infant's failure to develop the skills and attitudes necessary for speech with good articulation was due

largely to his limitations or those of the environment, the difficulties could have been overcome and the child could have had adequate articulation if the environment had been trained to begin early in creating a desire as well as a medium of communication. . . . Conditions which precipitate and maintain articulation defects after the child has begun to speak are only an extension of the conditions which limited the production and differentiation of sounds and which interfered with the development of a communication attitude before he began to speak.[27]

These generalizations point to the importance of surrounding children in home and in school with environmental conditions that arouse in them a desire to speak, that stimulate them with good speech patterns, and that make good speech rewarding and pleasurable. The effects of stimulating a child with good speech patterns are particularly impressive. Milisen, for example, outlines a retraining procedure for youngsters who misarticulate some of their sounds, in which the key feature is what he calls integral stimulation, forceful and vivid presentation by the instructor to the attentive child of the correct production of a sound. He says, "Children are able to improve as many as 85 percent of their misarticulated sounds after receiving only a *few* integral stimulations."[28] There can be little serious question of the value of systematic speech therapy in cases of significant misarticulation of speech sounds and patterns of sounds. And speech therapy in such cases is in large part a carefully designed intensification of ordinary stimulation of the child by means of good speech articulation on the part of his parents, teachers, and other persons, the encouragement of clear and adequate speech articulation by the child, and the maintenance in general of an environment favorable to the learning and the profitable employment of good speech on the part of the child.[29]

The psychology of speech development is, at bottom, the psychology of learning. In reward and performance—or, better, re-

[27] *The Disorder of Articulation: A Systematic and Clinical Approach, op. cit.*, p. 8.

[28] *Ibid.*, p. 14.

[29] The American Speech and Hearing Association, with the support of a grant from the United States Office of Education, undertook an extensive study in 1964 to evaluate speech and hearing programs in the nation's public schools; see *Asha* (1964), *6*:294 and 487. It is expected that data to be derived from this study will be valuable as a description of the situation as it exists and useful as a guide in future planning.

warded performance—is to be found the basic key to improved speech in the classroom and elsewhere.

SPEECH IN RELATION TO PERSONALITY

What is meant in this book by "personality"? A brief discussion of personality as it relates to speech and speech disorders will help point up some of the more important facts which the classroom teacher will want to take into account in dealing with speech handicapped children.

Personality may be defined in a practical way in terms of certain basic "dimensions." We may think of a dimension by picturing a line divided into degrees like the tube in a mercury thermometer. Temperature is a dimension, ranging by degrees from "below zero," through "zero," "freezing," up to "boiling" and beyond. Just so, we may think, for example, of a dimension ranging from wholesome self-confidence to distressing feelings of inferiority—the confidence continuum, or dimension, or graduated scale.

The point to be noted here is that there are not simply two kinds of individuals in this respect, the self-confident and those with inferiority complexes. There are "all kinds"; some are very confident of themselves, some are not fully as self-confident, most are more or less average, some are inclined to lack confidence, a few suffer from extreme degrees of what we call an inferiority complex. Moreover, any one person varies along this scale, or continuum, feeling more or less confident at some times than at others. When we say that a particular person is very self-confident we mean "as we know him," or "in the situations in which we see him," or "on the average," or "usually," or "according to what we are told," and so on. Not only is it difficult to make a specific statement about people in general; it is not easy to make a general statement about a specific person. Individuals differ, and a person varies. That is why we speak of personality dimensions, or continua, or degrees of difference, rather than personality types, or rigid categories. A person is not one thing or another; he is more one thing than another depending on the situation, purposes, risks, or rewards, and who is judging him.

We shall discuss personality, therefore, in terms of those dimen-

sions which we might use in making important judgments about ourselves and others. Some of these dimensions are concerned with self-adjustment or maladjustment—how we feel about ourselves, our "inner" states. Other dimensions have to do with our social adjustment or maladjustment—how we feel toward others, how we react to them, the kinds of relationships we have with them. The main dimensions we shall consider are the following:

1. Dimensions of self-adjustment.
 a. Self-confidence . . . feelings of inferiority, anxieties.
 b. Self-esteem . . . feelings of unworthiness or guilt.
 c. Gratification, happiness . . . disappointment, depression.
 d. Enthusiasm, interestedness . . . boredom, apathy.
2. Dimensions of social adjustments: attitudes and reactions toward others.
 a. Acceptance . . . awe, fear, contempt, rejection.
 b. Friendliness . . . antagonism, aggression.
 c. Cooperativeness . . . competitiveness.
 d. Belongingness, responsiveness . . . loneliness, withdrawal from others.

In each case, the first-stated extreme of the continuum, or dimension, represents very good adjustment and the other extreme represents very poor adjustment. In other words, the very well adjusted school child (or teacher) is happy, enthusiastic, and self-confident, with a good opinion of himself; he accepts others on their own merits, is friendly and responsive toward them, and is inclined to cooperate with them whenever possible. The poorly adjusted school child (or teacher) is bored, apathetic, worried, and depressed, with feelings of inferiority and unworthiness; he erects barriers of undue awe or contempt between himself and others, is antagonistic and competitive toward them, and tends to withdraw either physically (stays by himself) or psychologically (does not become well acquainted with others or confide in them).

One point to be noted with special care in this connection is that maladjustment among school children—and adults, too, for that matter—is seen not only in boisterous misbehavior but also, and more importantly, in shy, withdrawing, "lone wolf" tendencies, anxieties and tensions, and general unhappiness. In his

famous study of teachers' attitudes toward classroom behavior problems, Wickman found impressive disagreement between teachers and mental hygiene authorities as to the relative seriousness of various forms of misbehavior. Wickman summarized his main findings in these restrained words:

> Teachers stress the importance of problems relating to sex, dishonesty, disobedience, disorderliness, and failure to learn. For them, the problems that indicate withdrawing, recessive characteristics in children, are of comparatively little significance. Mental hygienists, on the other hand, consider these unsocial forms of behavior most serious, and discount the stress which teachers lay on anti-social conduct.[30]

In a follow-up and extension of the Wickman study, Sparks found that even when asked to rate the Wickman list of behavior problems as to the seriousness of their effects on the future adjustment of the child rather than with reference to their effects on the orderliness of the classroom, teachers still did not agree very well with psychologists and mental hygienists in their ratings.[31]

What the Wickman and Sparks studies seem to make fairly clear is that teachers, as compared with mental hygienists, tend to place more value on conformity to classroom rules and academic standards. For this reason they may sometimes overlook serious maladjustments in the quiet, docile, and excessively obedient child. By the same token, they may be overly impressed by the disturbing exuberance of the pupil who is "naughty in a normal sort of way" because it interferes with efforts to keep the class "in order." Stroud makes the very fundamental point that by frowning officially upon normal childhood behavior in the classroom we put "the teacher in the unfavorable position of having to keep order. . . . When the teacher is charged with the responsibility of keeping order at all times and at all costs she cannot take an objective attitude toward pupils who misbehave. She is really not free to try to get at the underlying causes or to plan a long-range course of action."[32]

[30] E. K. Wickman, *Children's Behavior and Teachers' Attitudes*, 6th ptg. (New York: Commonwealth Fund, 1937).

[31] Jack Norman Sparks, "Teachers' Attitudes Toward the Behavior Problems of Children," *Journal of Educational Psychology* (1952), *43*:284–291.

[32] James B. Stroud, *Psychology in Education*, rev. ed. (New York: Longmans, Green, 1956), chap. 15.

That mental hygiene principles are coming to be more and more widely recognized and accepted is indicated in the following statements made by W. Carson Ryan in reporting his observations during an extended study of American schools:

In at least two important fields—the nursery school and parent education—mental hygiene principles have definitely taken hold; and in work with younger children generally there is an encouraging trend toward conditions and practices that make for mental good health. In many schools of today one finds an atmosphere of friendliness and happy activity. Much of the traditional formality, the forced silence, the tension, the marching, is gone. Children's voices are heard in the halls and "classrooms." The younger children come gaily down the stairways (if stairways there are), natural and relatively unrestrained; the older boys and girls throng the corridors or outside walks, making their way to schoolrooms, shops, studios, libraries, laboratories, and playing fields—to tasks that mean something to them, that make demands upon their energies and their imagination, that often involve hard, difficult work, but work that they recognize as creative. Beauty of surroundings is considered a first requirement in these schools—there are flowers about, brightly colored murals painted by the children, attractive, informal workrooms for the various groups. In many of these schools art and music have begun to play the role that belongs to them as fundamentals in education and in life.

There are, moreover, an increasing number of schools, particularly for young children, where teachers are not only friendly but understanding, especially with regard to what are ordinarily known as "the emotions"; where care is taken to find out for every child his needs and possibilities and to try to meet these needs—quite as much for the so-called "normal" children as for the more noticeably "subnormal" or "difficult." In a small but growing number of school organizations, special aid is also available from child guidance clinics, visiting teacher staff, or similar services, to assist the school in applying . . . some of the knowledge derived from modern sciences with respect to human behavior.

Although written some years ago, Ryan's words still sum up, as well as do any more recent statements, what is meant by the recognition of mental hygiene principles in our schools, and the date of Ryan's publication, 1938, indicates that these principles are not as new and revolutionary as the more "conservative" critics of American education contend. The irresponsibility and lack of

restraint, and the basically antisocial and antieducational behavior of the pupils dramatized in *The Blackboard Jungle* and similar documents are crucially different from the self-motivated constructive learning behavior described by Ryan.[33] The schools described by him in the passage cited above have practically nothing in common with those against which pupils rebel in destructive ways. It is vitally important that the trends described by Ryan be encouraged until they are felt significantly by all the children and youth in the classrooms of this and other countries.

Since this book is concerned with speech disorders and speech correction, problems of personality will be considered in relation to these basic interests. No attempt will be made to cover systematically and in detail the various types and causes of personality disorders and the methods of psychotherapy or personality re-education.[34] In discussing personality for our specific purposes we shall keep constantly in mind (1) the speech handicapped school child and (2) his classroom teacher. Our aim is simply to make such a child and what his speech difficulties mean to him as understandable as possible and to point our practical ways in which his teachers can be helpful to him as a pupil and as a person.

Remembering, then, the dimensions of personality mentioned above, the first question to be considered has to do with the difference that a speech disorder makes to a child so far as his personal and social adjustment is concerned.

[33] W. Carson Ryan, *Mental Health Through Education* (New York: Commonwealth Fund, 1938), pp. v–vii; Evan Hunter, *The Blackboard Jungle* (New York: Simon and Schuster, 1954).

[34] The student interested in a substantial text in the clinical aspects of psychology and behavior would do well to read Norman Cameron, *The Psychology of Behavior Disorders* (Boston: Houghton Mifflin, 1947). A philosophically rich and fascinating treatment of the problem of personal adjustment is to be found in Harry Stack Sullivan (Helen Swick Perry and Mary Ladd Gawel, eds.), *The Psychiatric Interview* (New York: Norton, 1954). See also Albert T. Murphy and Ruth M. FitzSimons, *Stuttering and Personality Dynamics; Play Therapy, Projective Therapy, and Counseling* (New York: Ronald, 1960). See also Joseph G. Sheehan and Robert B. Voas, "Stuttering as Conflict: Comparison of Therapy Techniques Involving Approach and Avoidance," *Journal of Speech and Hearing Disorders* (1957), 22:714–723. Teachers have a great deal indeed to gain from writings such as these which deal with basic life problems as viewed by wise men whose experience of observing human behavior in its clinically significant forms has been extensive and remarkable.

The effects of speech disorders on personality The discussion that follows is presented with a special awareness of the very important distinction to be made between the sorts of personal and social maladjustment that are called "neurotic" and those that are reactions to disabilities.

Consider, for example, two comparable men, both of whom are in like degrees given to social withdrawal, discouragement, and feelings of depression. One is without both his arms, having lost them in a traffic accident; the other has two good arms and otherwise appears to be whole and healthy. Regardless of how much they have in common emotionally, the physical difference between them is clearly to be considered in evaluating and treating their adjustment problems. Feeling depressed because one has had both arms amputated is hardly the same as feeling depressed for reasons that are not apparent and that a psychiatrist tries to locate among one's early childhood experiences. In the latter case perhaps psychoanalysis or some other form of deep psychotherapy might be regarded, by some certainly, as appropriate or even necessary; for the man who has lost his arms, however, the same type of therapy would appear, to many perhaps, to be beside the point. The immediate need of a disabled person is not to have the reason for his discontent probed, since the reason is at least partly, and perhaps very largely, or even wholly, obvious; he needs to reduce his disability all he can and to learn to live gracefully with any part of it that he cannot eliminate. This calls for a kind of counseling quite different from most deep psychotherapy.

So it is with school children also. If two 10-year-old girls both dislike going to school, lay claim to illnesses to avoid going, spend time daydreaming instead of doing their lessons, and are generally unhappy—and if one is physically sound and free of tangible handicaps, while the other has an inadequately repaired cleft palate that gives to her voice nasal quality and to her articulation an indistinctness that makes speaking unpleasant for her and less than satisfactory for her listeners—their problems of adjustment are obviously different, no matter how similar they may appear on the surface. The one might appropriately be referred to the school psychologist if there is one or, if there is not,

to a community clinic, or one of the special services centers made possible by the federal aid-to-education program, where psychiatric attention can be given to her difficulties. The other properly would be brought to the attention of the speech clinician who would attend to her disability, on the working assumption that if it were eliminated, or substantially reduced, her feelings and her relationships with others would improve. Preferably, he would work cooperatively with at least a surgeon and a dentist specialized in cleft palate problems, in order to insure that her physical equipment for speech would be made as adequate as possible. (The team approach to the problem of cleft palate is described in Chapters Seven and Nine.) The clinician would also help the girl learn to resonate her voice and articulate her speech sounds normally or as nearly so as the child's remaining physical limitations and his own skill as a speech clinician would allow. Finally, he would provide for the child and for her teachers and her family the counseling that would enable them to know the essential facts of the situation, and to understand reasonably well what could be changed and what could not be, and how to cope effectively with any parts of the problem that would need to be lived with after everything that could be done to eliminate them had been done.

Essentially the same sort of distinction is also to be made between neurotic maladjustments and the adjustment problems of children who are handicapped in speech for reasons other than cleft palate—children who lisp, not because they are physically deficient, but because they have mislearned certain speech sound articulations; children whose speech is disordered because they are hard of hearing, or cerebral palsied, or mentally retarded; children who stutter because they have inadvertently learned to try too hard to talk too smoothly by tensing too much to produce speech easily and fluently. Such children are usefully regarded as disabled—in speech. Naturally, they react somehow to their disability; sometimes they react to it in ways that interfere with their social relationships and their inner tranquility. What they need most is to learn to speak as best they can and to live effectively with the best they can do.

The distinction between the neurotic and the disabled is never

to be forgotten by the speech clinician in diagnosing and treating the *problems* that he deals with. Not that a disabled child or adult may not have the same sorts of reasons other people have for developing a neurosis—in addition to, or even sometimes partly because of, his disability. As we shall see, however, available research data indicate that the proportion of the speech-disabled who are neurotic is probably about the same as the proportion of those who speak normally who are neurotic; this means that 90 percent or more of them are not neurotic. Almost all of them, even so, just as do nearly all normal speakers, have personal and social adjustment problems of some sort, and usually their speech disabilities figure in these problems somehow. But they would have some of their adjustment problems even if they spoke normally, simply because they are the kinds of problems normal speakers have—without being neurotic. Life is not completely simple for anyone; even the most sane person in the world, if he could be located, would doubtless be found to be more or less maladjusted at times, if only because of the difficulty he would face in adjusting to those who are maladjusted and neurotic.

A final word of caution needs to be said about making the distinction between the adjustment problems of the neurotic and the disabled, respectively, in real life situations. The word "neurotic" is often so vague, as used, that we cannot be very sure what those who use it mean; nor is the word "disabled" always clear. It is to be appreciated especially that the term "neurotic" can be, and quite frequently seems to be, defined so broadly that much of what we all do appears to be covered by it; indeed, there are writers who insist that our whole civilization is neurotic. With the word "disabled" we tend to have the opposite kind of problem; it is defined by many who use it in such a narrow or restricted sense that they seem to be classifying only those with the more grave and conspicuous physical deficiencies as "disabled," and everyone else as "able" or "normal." In general, then, unless we are careful we probably think of ourselves and others too often as being neurotic—as having no objective reasons for feeling bad—and too seldom as being disabled—as having tangible reasons for feeling bad. We need, therefore, especially as clinicians, to guard against jumping to the conclusion that anyone who seems de-

spondent, anxious, resentful, or shy is deeply disturbed or neurotic—before we look closely and thoughtfully enough to determine whether he has a speech disorder or hearing loss or other disability, or some obvious disadvantage, or other objective reason for being despondent, anxious, resentful, or shy.

After all the definitional smog has lifted, what remains of the distinction we are emphasizing that is basic and crucial is that between observable, tangible, objective reasons and essentially nonobservable, intangible, subjective reasons for disruptive personal feelings and social behavior. If a child or adult has an apparently substantial reason for feeling low, it would seem sensible to try to do something about the reason; if he feels low for no apparent reason, it seems sensible to probe as far back in his life as our investigation can take us, to find a reason to do something about. The point not to be missed is that when we subject a despondent disabled person to deep psychotherapy, probing for the reasons for his disturbed feelings as though his disability could not reasonably be considered a root for them, we confuse him at best, and at worst we deepen and complicate his sense of disturbance. We must cultivate to the hilt our sensitivity to what it means to a person to be disabled.

Since disabilities are more or less frustrating in their effects, the psychology of the handicapped is basically the psychology of frustration. The handicap of impaired speech is no exception to this general rule. In fact, there is hardly anything more frustrating, in ways that matter deeply, than something that constantly interferes with our relationships to other people. And few things are more significant in this respect than impaired speech. In the relationship between parent and child there is scarcely anything more intimate than the speech which passes between them. It conveys and reinforces feelings that can range from love to hate, from the nourishing warmth of affection to the drying chilliness of indifference and rejection. Everything about it, from the vocabulary to the faintest vocal inflection and the most casual gesture, contributes its mite or mountain to the personality of the child and of the parent and to the eventual consequences in home, school, and society.

The relationship between speech and personality is, therefore,

a two-way affair. They affect each other. And the effect is not only circular, but also cumulative. The more we snarl, the more we snarl. The more we purr, the more we purr. Also, and with special significance, the more we stutter, the more we stutter. In general, the more we learn to fear or dislike speaking to other people, the more we learn to fear or dislike speaking to other people. Misery, like success, feeds on itself. In other words, speech characteristics, once created, tend to affect the personality in ways that insure their further development. Or, to use Skinner's terms, the consequences of what we do operate to reinforce what we do and so to make us more disposed to do it again.[35] Having begun to speak hesitantly, even a little hesitantly, a child runs the risk of meeting with reactions from others that make it likely that he will speak still more hesitantly next time. On the other hand, a child who starts early in life to speak with a ready smile in his voice will be responded to in ways that will make the smile grow. What all this means is that once speech has come to be regarded by the child or his listeners as "defective" or "unacceptable," the impaired social relationships arising from this evaluation serve to inhibit and distort speech increasingly by small degrees; and the more disturbed or inhibited his speech becomes, the more the child's social relationships become impaired. It is the sort of vicious spiral by which the child is whirled farther and farther away from the center of his social group.

Through a proper understanding of this vicious spiral we can do much to reverse its expanding course. We may profitably, therefore, examine a bit more closely the specific ways in which a speech disorder affects a child's personal and social adjustments.

CONFIDENCE. In general, speech difficulties tend to make for impaired self-confidence. If you would like to grasp securely the vital meaning of this statement you can do so at least to a small degree by carrying out a simple exercise. It is to be urgently recommended for all teachers and prospective teachers. It consists merely of pretending to stutter or lisp in three or four situations. It can be done, for example, by going to a department store to buy "thome fathe powder" or "thun tan oil," or by going into a restaurant and ordering "huh-huh-huh-ham and eggs with

35 *Op. cit.*

c offee." There should be no explanations, and the whole thing should be carried off with a straight face, as though the speech difficulty were real. The act should be convincing to the listener. There is little need to specify the observations to be made. The feelings you will experience and the listener reactions that you will inevitably observe are the ones that will help to make the opening sentence of this paragraph come alive for you with strongly felt meaning.

Confidence can be defined as a feeling that one can do well, or at least well enough, whatever is expected or necessary. A moment's reflection will make it plain that confidence depends, therefore, on how one's goals or aspirations compare with one's usual performance. Feelings of confidence come from the experience of achieving one's goals. Of course, one has to want to achieve them, to place some value on doing so, to feel that it matters at least a little. Confidence can be developed, therefore, in three ways:

1. By improving one's performance.
2. By making one's goals low enough to reach and clearly defined enough to be able to tell that they have been reached.
3. By placing a proper value on reaching the goals so that achieving them is a stimulating experience, while not achieving them is not utterly catastrophic.

It follows that the classroom teacher can help the speech handicapped pupil to develop and maintain self-confidence, particularly confidence in his speaking ability, by:

1. Helping him to improve his speech, not only by her own efforts, but also by seeing to it that he is referred to a speech clinician in the school system or outside it.

2. Expecting no better speech from him than he is capable of producing at any given time. This means accepting his speech as it is, with the realization that until he is given speech therapy—or more speech therapy—it is unreasonable to expect him to speak as though he had already had it, and with the understanding that even if he is being given speech therapy, improvement takes time and may never be "complete."

When a child says that the capital of *W*ode Island is P*w*ovi-

dence, the teacher who is trying to build up his speech confidence will smile and say, "That's fine. Providence is the capital of Rhode Island." She will not toss the *r*'s at his tender and innocent ears too hard, but with a friendly and approving smile. By doing this she will combine a bit of the auditory stimulation we mentioned a few pages back (and that will be described more fully in Chapter Three) with the reassurance (reinforcement) the youngster needs in order to feel a little glow of success in having answered correctly and a bit more confidence in his ability to speak up again with similar pleasant results.

When a stuttering child gasps once or twice, shifts his tense little body about in the seat, and grinds out, "S . . . even times n . . . ine is six-six-sixty-three," the understanding teacher will be pleased, and show it. She will realize that there is no good reason why he should not have stuttered. What will matter to her is that in spite of the difficulty he experienced, he made the attempt and stuck it out. He answered correctly, and deserves to feel good about it. "That's fine!" will not only reassure him, but will also be as constructive an object lesson as his classmates could be given, especially in their role as members of the problem. If the teacher approves of Willie, they will tend to approve of him, too. And that will be very good for Willie—and for his speech—and for the other children. All this will make everything easier and more rewarding for the teacher too.

We do not say that a speech handicapped child should be greeted with a great show of approval even when he gives wrong answers. He deserves to be treated like the other pupils in this respect. The main point is that when he gives the right answer he should not be penalized for lisping it, or stuttering it, or giving it in nasal tones. He should be rewarded for giving the right answer. And if he is, he will get from the reward not only increased incentive for studying his lessons but also added encouragement so far as speaking is concerned. He does not expect to be praised *for lisping,* but he would be distressed by being disapproved *for lisping* that he cannot avoid What he needs is confidence that if he measures up in other respects, he need feel no hesitancy in *speaking.* His impaired speech should not be

reflected unfavorably in his marks and grade placements any more than it should be permitted to weigh in his favor. The confidence he needs is a confidence that he can hold his own in fair competition, without fear of penalty because he doesn't happen to speak with normal fluency, or sound his *l*'s, or because he sounds his vowels through his nose because his soft palate is deficient. He can no more be held responsible fairly for such things than for the color of his hair, or his skin, or the patches on his clothes. He can be held responsible fairly only for the best he can do, or a bit less.

3. Instilling in him a sense of accomplishment in speaking and a desire to speak as well as he reasonably can. Confidence, if it means anything vital, is not merely a sense of one's ability but a feeling of pride as well. The speech handicapped child not only should feel confident that he can speak and be accepted, but he should also feel good about it. He needs the sort of confidence that creates a desire to speak. It is likely that the child rather expects to be penalized or disapproved for speaking incorrectly. Just to realize that he will not be penalized, just to know that it is all right to go ahead and speak, even though he does sound his *r*'s like *w*'s or even though he does stutter, is tremendously stimulating to such a child. It makes him want to talk—now. So long as he feels that his speech has to be normal before it will be acceptable, he may want to talk ever so much, but not now, not yet. Convincing him that you like to have him talk the way he now talks is like opening the gates of a great dam holding back a flood of desire.

Not only does this give the pupil speech goals that mean something to him, but it also keeps him from setting his goals too high. The importance of this was pointed out in the preceding section. Against the added background of what has just been said, the question of goals should be more closely examined. The crucial consideration is that there is a more or less standard pattern of personal maladjustment, whether it is found in youngsters with speech problems or in other children—and adults too. It consists of a tense striving to achieve goals, or ideals, that are out of reach, resulting in continual or repeated feelings of failure, leading to eventual and increasing demoralization. We may call

it the IFD pattern: from idealism to frustration to demoralization.[36]

It is important to recognize the fact that there is no failure in nature, nor any success. Failure and success are feelings or judgments about our performances. Failure is the minus difference and success is the plus difference between what we strive for and what we achieve, between our goals and our accomplishments. This simply means that whether we feel that we have failed or succeeded depends on (1) our goals, what we are aiming at, and (2) how well or how much we actually did. Feelings of failure and an eventual inferiority complex may be prevented, therefore, not only by developing a higher degree of skill, but also by keeping our immediate goals realistic and keeping them low enough to insure our achieving them. By reaching our goals we enable ourselves to experience the successes from which we gain feelings of confidence, including the confidence needed to set our future goals a bit higher. In this way what we call ambition is nourished, just as it is the failure to achieve unrealistic immediate goals that withers ambition.

The speech handicapped child should be encouraged to gain, therefore, from the kind of speaking he *now does* the feelings of success that are so essential to his self-confidence. He should not be disapproved of because of his impaired speech, as such. Just as importantly, a child who has not yet learned through speech therapy what to do in order to talk without tensing too much or lisping should not be praised specifically for not stuttering or not lisping. Praise for *not* stuttering is, to such a child, just another form of disapproval of his stuttering. To say to a child who can't help stuttering, "That's fine. You didn't stutter at all that time. That's the way I like to hear you speak," is the same as saying to him when he does stutter, "You stuttered that time. I don't like to hear you stutter." Compliments for the wrong things or at the wrong times can have precisely the same effects as demoralizing criticisms. There are two ways to say, "I don't like you." One way is to say it. The other is to say, "I like you when you are not your-

[36] See Johnson, *People in Quandaries: The Semantics of Personal Adjustment* (New York: Harper & Row, 1946), chap. 1, for an extended discussion of the IFD pattern and its importance in relation to human maladjustment in general.

self—when you are different from the sort of person you usually are."

This point is so very important that if it is not thoroughly understood and constantly acted upon, almost nothing the teacher can do will build the child's confidence. To dismiss this as an overstatement is to miss the point it is intended to highlight. It is generally true that we hurt many more feelings and cause far more distress by thoughtless and misplaced compliments than by well-meant criticisms. More personalities are injured by glancing implications than by direct verbal fire. The reason is plain. We almost never *mean* to hurt anyone. We are almost always considerate enough to avoid making unkind remarks or unfeeling criticisms, intentionally. We are far more likely to try to say something neutral, reassuring, or presumably complimentary. That is why the verbal tool we use the most in trying to repair damaged feelings is: "I'm sorry. I didn't mean it *that* way." Almost always the words that do the damage are the ones we didn't know were loaded.

The speech handicapped child simply has to be accepted on his own merits and approved, speech disorder and all, if he is to be able to develop any significant self-confidence. Without confidence he does not have the will to do his best because he is overwhelmed by the feeling that his best is not good enough. Under such conditions he feels there is no use to try very often or very hard. If speaking is not satisfying or rewarding to him, why should he do any more of it than he has to? The only speaking that can be rewarding for him is the speaking he does. If it is to be rewarding, it must not be disapproved. He must not be penalized for his speech impairment even by being praised when he happens, without knowing how or why, to speak momentarily without the impairment.

It is to be appreciated, of course, that acceptance of the child as he is, speech impairment and all, at any given moment is not the same thing as doing nothing about his impaired speech. In accepting the child and the best he can do, we also accept his potential for further development and improvement. As he learns to speak better, certainly he is to be praised *for learning*. As he improves his speech by dint of the work he does to improve it, his

doing it should be reinforced or rewarded so that he will want to do more of it. This is radically different from complimenting him just for being lucky—for talking without stuttering without having done anything intentionally to talk that way. The important thing is to know, and especially for the child to know, just what you are rewarding. You should reward or reinforce a response, in this case a way of talking that the child is trying to learn by his own efforts. Perhaps under the instruction and with the counseling of a speech clinician the child is trying to learn to speak with more spontaneity, less holding back, and more easily without unnecessary tensing in order to say the words he wants to say. It is his doing this, his trying to talk in this better way, that you should reward—even though his attempt does not result in wholly fluent speech.

The effective teacher or clinician, like the effective coach, does not reward merely the result of effort but mainly the making of the effort, always with an eye to shaping or changing the activity involved in that effort a little more, reasonably more, in the desired direction. Indeed, a good baseball coach is not pleased by a player hitting a home run, if in doing it he shows poor batting form and is simply lucky—and even though the uncritical fans in the stands roar their uninformed and basically uncaring approval. It is hard to say, of course, how much harm we do, but certainly we do a great deal, by rewarding winning, or high grades, or fluent speech rather than the behavior involved in winning, or in losing, in studying and learning, quite aside from grades, and in the honest attempt to speak more smoothly, even though the attempt indicates mainly that there is much more learning yet to be done. It is behavior that is to be rewarded, the kinds of behavior that are desirable because of the better behaviors to which they lead.

If, then, the speech handicapped child is to gain the fullest possible measure of confidence he must (1) be helped to improve his speech as much as he can, (2) be encouraged to keep his goals realistic, to feel no threatening necessity for speaking better than he can at any given time, and (3) be made to feel that the best speaking he can do—or even something reasonably less than that under given circumstances—is, for him, successful, rewarding, and

decidedly worth doing. In a thousand ways, day in and day out, the classroom teacher can work toward these objectives without working overtime and without adding the tasks of a professional speech specialist to her other many duties. Moreover, she will be making her teaching practices generally more effective and her classroom more stimulating for all her pupils.

OTHER DIMENSIONS OF PERSONALITY. The influence of impaired speech on personal and social adjustment can be further indicated in terms of the other personality dimensions listed previously. In general, speech disorders tend to make for some degree of difficulty in achieving good personality adjustment. This is not to be overstressed, however. The personality adjustments of persons with speech difficulties are not, on the average, *strikingly* different from those of normal speakers. For reasons that range from the universal to others that are highly individualistic, children and adults generally experience, each in his own way, some degree of stage fright, at least a mild inferiority complex, a touch or more of shyness, and some number and complexity of anxieties or fears, tensions, and what they call problems. Those who have speech deviations tend, on the average, to experience, again for reasons that may be their very own or those shared by all mankind, either no more or just a bit more of these varieties of "not quite ideal" adjustment.[37]

Speech handicapped children are, after all, children. Aside from speech problems, they have the same reasons other children have for being unhappy, discouraged, shy, or worried. It would be unrealistic to expect them to be consistently clear-eyed, zestful, happy, outgoing youngsters, with or without their speech difficulties. One of our most common mistakes—it is made sometimes even by speech pathologists—is to take for granted that every sign of maladjustment in a speech handicapped child is due to his speech deviation or that the speech deviation is due entirely to the maladjustment. Some of the most important questions to be asked about any child with a speech problem are these: If the

[37] See Leonard D. Goodstein, "Functional Speech Disorders and Personality: A Survey of the Research," *Journal of Speech and Hearing Research* (1958), *1*:359–376; Sheehan, "Projective Studies of Stuttering," *Journal of Speech and Hearing Disorders* (1958), *23*:18–25; and Spriestersbach, "Research in Articulation Disorders and Personality," *ibid.* (1956), *21*:329–335.

speech problem were removed *now, today,* what difference would it make? What changes in the child's behavior, interests, attitudes, aptitudes, characteristic moods, and social reactions would be likely to occur? What problems would persist despite normal speech? Why?

The teacher is likely to gain a rather good understanding of a speech handicapped child by asking these questions about him and answering them very carefully. If she does she may expect to conclude in the usual case that the child's personality would be improved generally if his speech impairment were reduced or eliminated by effective speech therapy. She will probably decide that, even so, some speech handicapped children need special services in addition to speech therapy, either for reasons such as cleft palate or cerebral palsy that are related to their speech difficulties or for the same sorts of reasons other children have.

Speech therapy improves a child's personal and social adjustment as it improves his speech because impaired speech, insofar as it has any effect on the personality, tends to influence the child to move a bit to the negative side on the four dimensions of self-adjustment and the four dimensions of social adjustment that were listed in the text on page 67. That is, with a speech disorder a child has reason to experience some degree of decrease in confidence, self-esteem, happiness, and enthusiasm, along with a corresponding increase in anxiety, feelings of self-belittlement, discouragement, and apathy. So far as social adjustment is concerned, he has cause to undergo some measure of decrease in his acceptance of others, friendliness toward them, cooperation with others, and responsiveness to them, together with a related increase in his fear of other children and adults, dislike of them, the desire to compete against others instead of cooperating with them, and withdrawal from the company of others. As the child learns to speak better and with greater satisfaction, he tends to reverse this trend and to move toward the positive on these dimensions of personal and social adjustment. As a consequence he feels less and less frustrated in his pursuit of happiness and friendship. Nevertheless, he may, because of reasons other than impaired speech, continue to be unserene and not at peace with his world, even though he comes to speak with a golden voice. In

general, speech disorders and significant personality maladjustment are not necessarily related and when they are, it appears that better personality adjustment is more likely to result from clearing up a speech disorder than is the elimination of a speech disorder to result from attempts to improve personality adjustment without changing the speech.

Certainly what speech handicapped children need, above everything else, so far as our common day-by-day living with them is concerned, is *reassurance*. They need to be met a bit more than halfway—sometimes they have to be "gone and fetched"—if they are to build friendships, gain confidence, and cultivate the personal qualities that make themselves unmistakably evident in quick smiles and happy laughter. They need help in learning to speak as well as they can and to gain an encouraging sense of satisfaction from the best they can do while they are learning to do better.

THE SCHOOL AS A MENTAL HYGIENE AGENCY

Any careful examination of the possible ways in which the school can contribute to the mental health or personal and social adjustment of children reveals certain crucial factors which necessarily play important roles in this connection. Among these factors are:

1. Teachers' personalities.
2. Disciplinary policies and practices.
3. Marking or grading systems and examinations.
4. Extracurricular activities.
5. Special services, such as remedial speech services, psychological guidance, visiting teachers.

The personality of the teacher In his landmark study of our nation's schools, *Mental Health Through Education,* W. Carson Ryan devotes a substantial part of his discussion to the teacher's personality.[38] Pointing up what he has to say on this matter,

[38] *Op. cit.,* pp. 11–27. You will do well to consult also Fritz Redl and William W. Wattenberg, *Mental Hygiene in Teaching,* 2nd ed. (New York: Harcourt, Brace, 1959), particularly Part C, "Classroom Applications," in which chapter 10 deals specifically with "The Psychological Roles of Teachers." See

he quotes the following incisive words of the great mental hygienist, William H. Burnham: "A healthy school atmosphere can only be created by teachers who are themselves mentally healthy and who have an abiding interest in children and a real respect for the personality of each child."

It is much too easy to read that sentence. As our eyes leap lightly from phrase to phrase, we encounter no strange words to give us pause, no jarring single idea to bring us up short in a posture of reflectiveness. We experience the unfortunate illusion of easy and complete comprehension. Actually, almost any mathematical or chemical formula is simplicity itself compared with Dr. Burnham's smoothly flowing sentence, when comprehensively examined and understood to the point of effectively carrying out the actions it prescribes. Any teacher who grasps *and acts upon* what Burnham means by "only," "created," "mentally healthy," "abiding interest in children," "respect," and "each" will be well on the way to providing a *"healthy school atmosphere"* for her pupils.

One of the authorities in the field of mental health who has done most to make clear just how a teacher might express "an abiding interest in children and a real respect for each child" is Professor Ralph H. Ojemann of the Institute of Child Behavior and Development, University of Iowa. Ojemann has been concerned for many years with what he terms preventive psychiatry, the ways and means of preventing mental and emotional disorders. In the vast amount of work he has done with school children and their teachers, he has emphasized the basic notion that good mental health is fostered by an appreciation of the causes of behavior in ourselves and in others. He distinguishes between a "surface" approach and a "causal" approach to the understanding of behavior. Ojemann wrote in 1961:

Some years ago, while we were making observations of parental and teacher behavior toward children, it appeared to us that many adults tended to deal with child behavior as a surface phenomenon instead of

also Dorothy Rogers, *Mental Hygiene in Elementary Education* (Boston, Houghton Mifflin, 1957); and *Mental Health in Modern Education,* Fifty-fourth Yearbook, Part II, National Society for the Study of Education (Chicago: University of Chicago Press, 1955).

taking account that factors were underlying or causing the behavior. Our observations also indicated that such an approach to behavior tended to produce conflicts and emotional strains in both adult and child.[39]

Studies by Ojemann and his associates have yielded considerable objective evidence of the soundness of his fundamental hypothesis that a "causal" approach to our own reactions and to the behavior of others is more conducive to understanding, cooperation, and good adjustment generally than is a "surface" approach. Ojemann points out that research has provided some evidence that the child can be guided toward a more causal orientation to his social environment.

Furthermore, those children who have acquired to some degree such an orientation show many of the characteristics that increase the probability of the individual's being better able to deal with the stresses presented by the environment. . . . Being emotionally free to learn about others is helpful for getting to understand those with whom one works. This is true for the teacher in understanding children in her classes and for children understanding the teacher. . . .[40]

Ojemann notes that there are several ideas of the function of the teacher. Some say she is to teach subject matter and that that is her primary function, others that she is to deal with personality but just enough to control behavior, still others that she should know enough about personality development to identify the child with tendencies toward emotional disturbance. Ojemann points out:

But when we analyze the learning process as it takes place in school, we find that the teacher's relation to the personality development of the child involves much more than the foregoing suggestions would allow. There is evidence that the *way* teachers work with children in the day-to-day relationships, the *nature* of the learning programs they

[39] Ralph H. Ojemann, "Investigations on the Effects of Teaching an Understanding and Appreciation of Behavior Dynamics," in Gera'd Caplan (ed.), *Prevention of Mental Disorders in Children* (New York: Basic Books, 1961), chap. 17.

[40] *Ibid.* See also, Ojemann with Bill C. F. Snider, "The Development of the Child's Conception of the Teacher," *The Journal of Experimental Education* (1963), *32*:73–80; and Rolf E. Muuss, "The Relationship between 'Causal' Orientation, Anxiety, and Insecurity in Elementary School Children," *Journal of Educational Psychology* (1960), *51*:122–129.

devise, and the *way* in which assignments are made all affect the development of the child. We can demonstrate this by examining the nature of child behavior and the effects of various influences upon its development.[41]

The impressively simple and heartening implication of Ojemann's findings is that when teachers are trained in an understanding of the reasons underlying the behavior of children they tend to become the kind of teachers Dr. Burnham was talking about over a half-century ago. Ojemann has shown, moreover, that they become able then to do far more than they could before to train their pupils in turn to exercise an appreciation of the motives and circumstances responsible for their own actions and for those of their classmates—and even for the reactions of their teachers. The consequences are pervasively constructive and wholesome.

What all this means is that it is good for children to be understood by their teachers, and it is good for their teachers to be understanding of them. It seems superfluous to add that this is true not only for speech handicapped children and their teachers but also for other children and for teachers generally. If there is any difference—and there isn't always—it is that some youngsters who feel frustrated and stricken by difficulties in speech have a special need for teachers who "have an abiding interest" in them and "a real respect" for their individual personalities.

Disciplinary policies and practices There are probably few, if any, educators of substantial stature who would defend today the view that physical punishment is to be accepted as a method of classroom discipline. True, in the files of the University of Iowa Speech Clinic—and this is probably so of any clinic in which a large number of cases has been examined—there are a few recorded cases of children, mostly stutterers, who have been physically mistreated for "not speaking properly." Hildred Schuell tells of a severe stutterer who "had for several years had his ears boxed in the classroom whenever he stuttered."[42] Few teachers,

41 Ojemann, *Personality Adjustment of Individual Children*, rev. ed. (Washington: Department of Classroom Teachers, American Educational Research Association of the National Education Association, 1962), p. 3.

42 Hildred Schuell, *Differences Which Matter: A Study of Boys and Girls* (Austin, Texas: Delta Kappa Gamma Society, 1947), p. 9.

however, need to be reminded that no child should ever, under any circumstances, be *punished* for impaired speech.[43]

It is less well appreciated, however, that punishment in the form of "psychological whipping" can be as damaging as corporal punishment. As a matter of fact, it can often be far more devastating in its long-term effects. The undesirability of sarcasm is, of course, generally recognized and, hopefully, need not be labored. Nor does any teacher have to be told that it is bad for a speech handicapped child to be ridiculed, teased, or belittled for his speech impairment. What even the best teachers need to be reminded of occasionally, however, is the sometimes demoralizing effect of unintentional inconsiderateness and rejection. Absentmindedly "shushing" a youngster, especially a speech handicapped child, who comes bounding into the classroom late, excitedly eager to share with teacher and classmates the unique adventure of a dramatic traffic accident that prevented his getting to school on time, can deflect regrettably the course of the child's growing affection for the teacher. Not listening—nothing so positive as outright rebuke, just not listening—to children when they feel warm and friendly and want to talk to us is sometimes, as the child sees it and feels it, a bewildering unkindness. And this is particularly to be appreciated if the child has impaired speech and is quick to feel that he is being rejected on that account.

After all, the kind of discipline that is most important is self-discipline. It is the discipline that a youngster displays when he is proud of having done the best he could—proud not because he has escaped punishment, but because he has gained the positive rewards of a teacher's warm smile and a freckled classmate's friendly wink, rewards that live on and grow within himself as the kind of self-esteem which is reflected in confidence, zest, and kindness. It is the sort of self-discipline that is seen in a set of

[43] Four particularly informative books with stimulating treatment of the matter of school discipline are George V. Sheviakov and Fritz Redl, *Discipline for Today's Children and Youth*, rev. ed. (Washington: Department of Supervision and Curriculum Development, National Education Association, 1956); Clark E. Moustakas, *The Teacher and the Child* (New York: McGraw-Hill, 1956); Redl and Wattenberg, *op. cit.*; and Karl Schofield Bernhardt, *Discipline and Child Guidance* (New York: McGraw-Hill, 1964). See also *Discipline*, bulletin 99 (Washington: Association for Childhood Education International, 1957).

motives and a sense of values that can be trusted to go on doing their constructive work when the teacher's back is turned and after school is out. It is the kind of self-discipline that is learned by example from a teacher who lives it herself and lends it a compelling glamor.

Marking or grading systems and examinations Most teachers of the handicapped, including speech clinicians, since they are necessarily imbued with a mental hygiene point of view, probably yearn, in their moments of unrestrained idealism, for schools in which there would be no "grade levels," just cooperative groups of students with common interests; no "marks," simply constructive and helpful evaluations of pupils as individuals; no "promotions," just progress toward meaningful goals for wholesomely motivated children; no "examinations," but friendly, conscientious efforts day in and day out to understand each child's specific difficulties and needs and to provide effective counsel and action for dealing with them. In their realistic workaday fashion, however, these teachers combine a practical respect for actualities with an alert watchfulness for opportunities to make the most of them.

There is no question that tests, quizzes, and marks do tend to make for a certain amount of anxiety, tension, and dissatisfaction. A professor of education has complained of certain grading practices in these words:

> A competitive marking system is not only psychologically unsound, it is also very undemocratic. . . . The old argument that all people compete for the essentials of adult living, and that competition in schools is good preparation for later life, ignores the heterogeneous nature of a school population. Any ninth-grade class may include future doctors, dentists, teachers, farmers, clerks, and day laborers. People in these different vocations certainly do not compete with individuals in other vocations in adult life. There is no logic in forcing such competition in public schools. There are many opportunities for a more legitimate use of competition in public schools than in determining school marks.[44]

[44] Paul E. Kambly, "Marking and Reporting," in Paul B. Jacobson, ed., *The American Secondary School* (New York: Prentice-Hall, 1952), p. 388.

In general, grading systems and examinations that bring teacher and child into closer rapport, and that make for a more understanding and constructive evaluation by the teacher of each child's motives and inner needs as well as the surface manifestations of his performance, are clearly to be preferred.

As we have already stressed, a child involved in a speech problem should never be graded either down or up specifically because of his disturbed speech. In any class in which grades depend in part on speaking or oral reading, the teacher should make a conscientious effort to determine precisely in what respects and to what extent deviations in articulation, voice, or fluency are affecting the quality or amount of the pupil's performance. Then she should grade him fairly in allowance of the effect of the speech handicap. If, aside from the lisp or stutter or nasality and its frustrating effects, he is doing B work, he should receive a B, instead of the C, D, or even F that he might receive if no allowance were made for the speech impairment. Moreover, it should be made clear to him, again and again if need be, that this is the kind of treatment he is to expect. Even one day of anxiety is most undesirable if it can be avoided.

There may be severe cases in which no speaking or oral reading should be expected of the child; grades, if they cannot be dispensed with in such cases, should be fairly based on written and other evidence of work done, improvement, and general mastery. Grades for "deportment," if they have not been abandoned, should take into account, in a constructive spirit of mental hygiene, the reactions to frustration normally to be expected of many speech handicapped children. You would not stand on a child's toes and then grade him down in "deportment" if he were to yell or kick. From the stuttering child's point of view it is as though somebody were "standing on his tongue." Grading him down for not smiling simply grinds the heel down more harshly.

As far as examinations, tests, and quizzes are concerned, every effort should be made to make them fair, to give due and reassuring warning, and to promote insofar as possible a relaxed and confident attitude toward them. In every way possible the

teacher should take the children into her confidence, make her motives in testing them understandable and reasonable, and take pains to explain the reasons for low grades and to help the pupils who receive them to understand their shortcomings and to find ways and motives for reducing them. Examinations should be given as a means of obtaining information about the individual children that is to be used as a basis for improving the instruction they are receiving, not merely as a means of grading and classifying them. From a clinical or mental hygiene point of view, examinations should be administered in such a manner as to keep worry and tension down to the lowest possible minimum.

A word may be said appropriately here about recent developments in the programming of instruction. The principles and techniques of such programming are not properly to be covered in this textbook, but it is relevant that the increasing use of them appears to promise better days ahead in the classrooms of the world. Through programmed instruction, the rate and amount of learning can be substantially adapted to each pupil's motivation and ability; the lock-step system of the same prescription for all, providing too little to learn too slowly for some and too much too fast for others, can be avoided. In working with programmed material the pupil completes sentences, answers questions, fills in blanks, and in other ways demonstrates the learning he is experiencing, and the programming is commonly designed to insure correct responses—that is, the positive reinforcement that comes with feelings of success—about 95 percent of the times responses are made. Children, and adults as well, learn somewhat faster and develop stronger motivation for further learning when using programmed materials, according to a number of studies reported to date. Programming frees the teacher to concentrate more on the positive aspects of instruction and less on the negative reactions involved in "correcting mistakes," and so it makes possible better relationships between teacher and pupil. It has a potential for increasing the pupil's liking for schooling and his motivation for continuing to learn through reading and in other ways after leaving school. So far as it has these effects, programmed instruction can make the school a better place for

speech handicapped children who are sometimes embarrassed and discouraged under traditional classroom conditions. It can make the school better for all the other children, too.[45]

Finally, it is to be remembered that speech impairments, particularly speech retardation (see Chapter Six) and difficulties associated with hearing loss (Chapter Eight), sometimes imply a degree of *general language handicap*. To the extent that this is true, the pupil who has a speech problem will be affected adversely in written as well as oral work. The alert teacher will keep this well in mind in evaluating the papers and tests of pupils whose speech is impaired. The teacher will find a working relationship with a speech clinician most helpful in adapting instruction to the needs and abilities of any such child.

Extracurricular activities To the teacher who is interested in the general school adjustment of speech handicapped children, extracurricular activities are of tremendous importance. In some cases they are so important that one can only wonder why they are called "extracurricular." True, they can be overdone, and there is real danger in this, but wisely employed they can make a gratifying difference in the handicapped child's total school experience.

Special attention should be given by the classroom teacher to every pupil with a speech problem to find for him some means of

[45] From the vast literature on programmed instruction that has been published in the past few years, the following references might well be selected to provide a stimulating introduction to the subject. A. A. Lumsdaine and Robert Glaser, *Teaching Machines and Programmed Learning* (Washington: Department of Audio-Visual Instruction, National Education Association, 1960); Edward B. Fry, *Teaching Machines and Programmed Instruction, an Introduction* (New York: McGraw-Hill, 1963); John P. DeCecco, *Educational Technology* (New York: Holt, Rinehart, and Winston, 1964); and the annual guide to programmed instructional material, an annotated listing prepared by the Center of Programmed Instruction for the U.S. Office of Education, the first two guides being titled *Programs, '62* and *Programs, '63*. See also Audrey L. Holland and Jack Matthews, "Application of Teaching Machine Concepts to Speech Pathology and Audiology," *Asha* (1963), *5*:174–182. The book by Holland and Skinner, *The Analysis of Human Behavior; A Program for Self-Instruction, op. cit.*, is an especially good example of a textbook programmed in accordance with the programming principles proposed by Skinner, who has played a pioneering and major role in developing the theoretical basis and much of the operational detail of programmed instruction. See Skinner, "Reflections on a Decade of Teaching Machines," *Teachers College Record* (1963), *65*:168–177; and "Teaching Machines," *Science* (1958), *128*:969–977.

participating in the athletic, musical, dramatic, and other school programs, formal and informal. These children need exhilarating group activity and recognition, sometimes even more than other pupils do, and it is usually more difficult for them to satisfy their needs in this connection within the classroom. A stuttering child who can sit with the school orchestra and play a violin in front of "all those people" is much better off than one who has no ready means of gaining similar satisfactions. A high school boy who speaks with a nasal twang but can run for touchdowns can even be a school hero instead of merely the butt of thoughtless jibes. If a lisper cannot qualify for a part in the school play, at least he can be on the stage crew and enjoy hours of happy companionship and worth-while accomplishment. Every child can do something that will draw him closer to the eddies of friendship and warming recognition that make any school as memorable as it comes to be in the lives of its children.

Certain words of warning are in order. As has already been mentioned, extracurricular activities, so called, can be overdone. A child can have too much of them just as he can have too much homework. He can be kept in a state of near exhaustion, not only from physical exertion but from emotional overstimulation also. The wise teacher will of course be as sensible about this matter as she will about "curricular" activities.

Contests, generally speaking, are not as good from a mental hygiene point of view as "no decision" activities. Playing the piano for the fun of it, for the self-expression it affords, and for the gayer party it makes is better for a child than playing the piano before a music festival judge. It may enhance the glory of the school to win a music festival award, but for every child who runs home glowing with victory there are dozens who leave the platform disappointed and more discouraged than challenged. Trophies, medals, and ribbons can do to extracurricular activities what grades and marks have done to the three R's—they can turn them into ordeals instead of adventures in learning, something the child does for the school and the town instead of for his own enriching pleasure, sources of worry and tension instead of gaiety and relaxation. The mental health of all our children and adult citizens depends in some measure upon our fencing off

certain areas of experience as recreational preserves with signs around reading, "No Winning or Losing Allowed."

Special services Obviously one of the most direct ways in which the classroom teacher can contribute to the personal and social adjustment of speech handicapped pupils is in seeing to it that the special resources of the school and community are brought effectively to bear upon each child's needs. Some youngsters with impaired speech need more than speech therapy. They sometimes require dental care, medical attention, special tutoring, vocational counseling, the sort of personality re-education that a good school psychologist can provide, and other special services. The classroom teacher is often the person who can do most to see to it that such a child is not neglected and that the services from which he might benefit are obtained for him. A proper study of the following chapters will contribute toward the teacher's preparation so that she will be more helpful in this connection than she otherwise could be.

Practically every community—town, city, county, state, region—has many private and public agencies, from service clubs and Junior Leagues to state departments of social welfare and crippled children's services, to which the teacher can turn for help and even for funds with which to obtain needed hearing aids, glasses, social service care, or medical attention for children who are being allowed to drift, through ignorance or poverty or for other reasons, without benefit of the services which are rightfully theirs in our democratic society. In 1965 the people of the United States through their government enlarged existing programs and created new ones to improve education for all children and special services for the handicapped, and to reduce where possible the stultifying effects of poverty and related environmental blights. These government actions are being translated into community programs throughout the nation. The classroom teacher has not only the right but also the obligation to take the initiative in bringing the services provided by these and other programs to any pupil who needs them—and some, at least, of her speech handicapped pupils do need them.

Speech diagnosis and therapy are, of course, the chief special

services that should be secured for every child who has a speech disorder. The rest of this book is devoted specifically to a consideration of the ways in which the classroom teacher can cooperate with the speech specialist in her school or provide some measure of counsel and instruction herself for her own speech handicapped pupils. For the present we need only to point up the general principles of personality adjustment that are of special value to the classroom teacher in doing what she can to help pupils who experience speech difficulties.

PRINCIPLES OF PERSONALITY ADJUSTMENT FOR SPEECH HANDICAPPED CHILDREN

The child as a person The principles and objectives of mental hygiene, or personality training, should be adapted to each individual. We shall consider specifically how they can best be adapted to the adjustment problems and needs of speech handicapped children.

First of all, it is essential to keep constantly in mind the child as a person with a speech disability in unceasingly changing but ever meaningful interaction with other persons in an environment that varies from moment to moment and season to season, for all that it may seem to stay the same. Dr. Kenneth Scott Wood, Director of the Speech Clinic at the University of Oregon, has made this provocative statement: "All forms of human behavior are associated with language or come to be. . . . A child learns speech, then, as a part of the whole process of organizing his behavior and learning to adjust to his environment."[46]

We may think of a child's disturbed speech as a stimulus which the child provides for his teachers, classmates, parents, and other persons in his environment. To this stimulus they respond. They tend, however, to overrespond. Too often the response they make, presumably only to the child's unusual speech, is actually a reaction they make to *the child.* In the meantime, his speech is only one of his characteristics. He is not just "a stutterer," "a lisper,"

[46] Wood, "Parental Maladjustment and Functional Articulatory Defects in Children," *Journal of Speech Disorders* (1946), *11*:255–275. See also footnote 7.

"a cleft palate case," or "a spastic." He is a child who sometimes makes a particular type of speech error but who does many other things too, and who possesses a host of personal qualities which have to be taken into account in making a fair evaluation of him. Moreover, his environment has to be considered—his family, neighborhood, playmates or lack of them, the teachers he has had, the opportunities or lack of them that his environment provides and has provided.

Two basic objectives Keeping in clear focus, then, *the child* who is caught up in a speech problem, along with all the other members of the problem, we can readily recognize that there are two basic objectives to be pursued.

1. Improving the speech as much as possible is clearly desirable from a mental hygiene standpoint. The more the frustration arising from indistinct, labored, or blocked speech is decreased, the more the common maladjustive reactions to frustration are diminished. Specific remedial speech measures are presented in succeeding chapters and will not be dealt with here.

2. Training the child to live gracefully and effectively with his speech impairment, so long as it persists, is the other basic objective. While much of the preceding discussion in this chapter is relevant to this objective, it will pay us to emphasize certain of the more crucial considerations.

Accepting the best one can do Living gracefully with one's shortcomings, temporary or permanent, is largely a matter of accepting one's current best without resentment and without apology. The word "best" is to be stressed. The lame boy should be taught to dance as well as he can, to walk with the greatest comfort and ease possible, and helped to feel glad that he can dance and walk the best he can. No self-esteem is gained by giving up and accepting less than the best one might reasonably achieve; it should be emphasized just as definitely that the goal should be no higher than the best one can reasonably accomplish. A child whose speech is impaired should be everlastingly at the job of learning to speak as well as possible, with no sense of disappointment because he cannot do better than "possible." He need feel

no urge to apologize for the way he speaks so long as he is doing what he can to improve. But it must not be overlooked that he cannot be expected to make even an effort to improve unless he is given the necessary encouragement and understanding of his problem and ways of coping with it. That is where the classroom teacher comes in. She is in a strategic position to give the child the incentives he needs and at least some measure of the information so essential in dispelling the mystery of his difficulty and in building the hopefulness he must have if he is to make a "reasonable" effort to cultivate better speech.

The importance of perspective Living gracefully with one's shortcomings is also a matter of placing them in a proper perspective. This is done chiefly by making the most of one's assets. The classroom teacher can do much good for a speech handicapped child by finding out what his talents are and encouraging him to develop them. If he can learn to tap dance, play ping-pong, blow a trumpet, or do card tricks, he enables others to see him as a more complete person rather than as just "a speech defective." Not only should he develop his talents, but he should also play them up in assuming his place in his social group and in thinking about himself.

A man once came to the University of Iowa Speech Clinic and announced that he was a "stutterer." It is true that he did stutter slightly and occasionally. He was one of the mildest cases we had ever seen. In his own eyes, however, he was a "stutterer." What else was he? He managed a very successful brokerage office, spending much of his time on the long-distance telephone transacting business. He had once defeated Walter Hagen at golf. He had a cultivated singing voice, was personally acquainted with many opera stars who respected his vocal talent, and frequently sang over the radio. He had a degree from one of the nation's finest universities, a lovely home, and a charming wife. But he thought of himself as a "stutterer." Clinical "treatment" for this very superior cultivated individual consisted almost entirely in getting him acquainted with himself, in helping him to see how unimportant his slight stuttering was in relation to all his unusual abilities and fine personal qualities, in providing him with

an abiding good opinion of himself. About the only thing he needed was a sense of proportion about his stuttering. And when he achieved it his stuttering tended to decrease, although there was not much improvement for the excellent reason that there was almost no room for improvement in the first place. The total clinical result, however, viewing the case not just as a "speech disorder" but as a man, was very gratifying.

This case is not typical, but it is a good one for making a point. One need not have as mild a speech imperfection or possess as many unusual abilities as this man did in order to profit from the kind of counseling he was given. Any speech handicapped child would profit from much the same instruction and counseling. The man was instructed to be more frank and objective about his very occasional speech tensings and to talk to his friends about them, not as though they were a sin and a shame, but as though they were an interesting aspect of his individuality which he was trying matter of factly to do something about. He was to treat the topic lightly in discussing and thinking about it, much as he might treat a tendency to muff an occasional golf shot, and he was to work on the tensings, not with grim determination, but with reasonable persistence and moderate seriousness of purpose.

He was asked to write letters regularly to his clinician, in which he was to tell about his accomplishments. The letters were supposed to be a sort of self-elevating diary, but shared with another person and not kept secret. In other words, he was given training in talking about himself, without boasting and without apologizing either. He was simply encouraged to give due weight to the good things about himself—his assets. Toward this same end, he was asked to keep a scrapbook in which he pasted news stories about himself, congratulatory letters he received, and other evidences of his abilities and achievements and the high regard in which he was held by other people. And a considerable amount of talking went on between him and his clinician in order to provide motivation for all this, an understanding of the job to be accomplished, and a reinforcement of the gains made week by week.

By such means any person in a speech problem, child as well as grownup, can be helped to gain a better perspective with regard to his impaired speech and to make the most of his assets in the

interests of better personal and social adjustment. Included in any psychologically sound "Children's Charter" should be the provision that every child, handicapped or not—but especially if handicapped—has the right to a good opinion of himself, feelings of success and personal worthiness, the reasonably full development of his assets, and encouragement to feel and to express a justifiable pride in his capabilities and accomplishments. Added to this should be a due recognition of the fact that one of the important signs of maturity and good adjustment is the ability to receive and enjoy compliments, and to give them with easy grace and genuine feeling. Awkwardness in this respect is an almost sure index of inner insecurity. To the remark, "That's a lovely new dress you have on this morning, Sally," the secure, well-adjusted child replies frankly, "Thank you. I like it, too."

The poorly adjusted person may tend to respond to compliments with an inner glow of pleasure but with an outward reaction of befuddlement or even apology. The secure public speaker with a good personality responds to "That was a fine speech," not by protesting that "It was nothing," or "I really should have had more time to prepare it," or "I wasn't quite up to par tonight, you should have heard me last Friday," but with "Thank you, I m glad you liked it. I enjoyed giving it." This sort of adjustment to one's successes usually begins in early childhood; at least, the longer its cultivation is postponed the less likely it is to be well-developed. We all go through adult life dragging the 19 tails of our childhood, and it is easier to keep them up gracefully if we start holding them that way before they get too heavy.

One practical point in this connection deserves special mention. We have developed an attitude in our schools that is most unfortunate from a mental hygiene point of view, the traditional attitude toward what we regrettably call "apple polishing." Because of this ill-advised name for what should, and almost always could, be a sincerely friendly gesture of warmth and appreciation, school children have an almost universal sense of guilt about their wholesome tendencies to like their teachers. The term "apple polishing" and the whole sadly distorted point of view that it symbolizes is a sorry, telltale indication of the impaired teacher-child relationships that have come to be accepted as "right and

natural" in all too many schools. For what good reason should a child hesitate to give his teacher an apple, so to speak? For what sound reason should the teacher feel uncomfortable when given an apple? What is wrong with pupils liking their teachers, and saying so, and what is wrong with the teachers frankly showing that it pleases them to be liked by their pupils? There is nothing wrong with this. On the contrary, it is highly desirable from the point of view of the personality growth of both pupils and teachers.

Generally speaking, most, if not all, scientific students of human behavior would doubtless agree that we place too great a premium on modesty. A little cockiness never hurt any child, or any grownup. Freely sharing one's joys and triumphs with others is one of the finest experiences in life. "I done it and I'm glad!" as a response to an achievement might startle one's English teacher, but it would be regarded by a psychologist as a good healthy reaction.

To the extent that the classroom teacher can cultivate this point of view and develop it in her pupils, particularly those who are handicapped in speech or otherwise, she will be doing something for them for which they will be forever grateful.

Verbalizing one's problems Helping a child to live gracefully with a speech impairment involves training him in one other important aspect of personality growth. This is the ability to talk about his problem impersonally, objectively, and as intelligently as possible—the ability to put his worse foot forward gracefully and without losing his balance. The common anxiety about always putting one's better foot forward is a sad miscarriage of psychology. You can't get ahead very fast on just one foot, better or worse. The only good first impressions that do not boomerang are the ones that can be maintained, either by living up to them or by leaving town soon enough.

It is usually necessary for the teacher to take the initiative in getting the speech handicapped child to talk freely about his problem. As soon as she discovers that a pupil has difficulty speaking, she should make it a point to find a little time for discussing it with him. The common fear that such a child is made self-

conscious by having his speech peculiarities mentioned is unfortunate, at least with respect to impairments that are severe. It is not a question of making the child self-conscious about a marked speech disorder. He *is* self-conscious already—or if he isn't it is important to keep him from becoming so while dealing effectively with his problem. The question is not *whether* the teacher should talk to the child, but *how* she should go about it.

There is no set talk to be made to any and every speech handicapped child on the second day of school. The procedure varies all the way from saying nothing to carrying out a long-term comprehensive campaign. If the speech problem is very mild, and the youngster seems unaware of it or unconcerned about it, there is usually no point in saying anything to him about it. In such a case practically the only reason for speaking about it would be to tell him either that you are going to refer him to the speech specialist, why and what he will do for him, or that you are going to teach him how to form his *l*'s or *r*'s better—or whatever else you are going to do for him.

Whether the speech difficulty is mild, average, or severe, the child young or more advanced, shy or outspoken, almost always the best approach is to tell the pupil simply that you have noticed something about his speech that interests you. You believe he would get a lot of satisfaction from working on it a bit. You think you might be able to help him or to get some help for him. You have studied speech problems in a course you took in college, and really there is a lot that can be done about them. Has he ever thought much about it? Has he ever had any speech lessons or exercises? Do his parents ever try to help him with his speech? What do they do? You'd like to talk to his mother about it as soon as you can find time for it. Would he mind if you did that? You'd like him to tell you more about it. Is there anything he'd like you to keep in mind in the classroom—when to call on him or when not to, for instance? Does he mind reciting? Is it easier to speak or to read? Does he like to sing? Would he like to sing in the glee club? Does he like athletics? Would he like to learn how to play a musical instrument? Does he have a paper route? Would he like to have one? Is he a Boy Scout? Would he like to be one? Tell him about your own interests, what you like to do in your spare

time, where you spend your vacations, your speech courses in college, any persons with speech problems you know who have overcome their speech difficulties or have succeeded in some life-work in spite of them.

It is highly desirable not to use the term "speech *defect*" in talking to the child, and not to refer to him as a *"speech defective"* in talking about him to his parents or others with whom you discuss his problem and his possibilities. You should not use the words "defect" and "defective" at all; you will observe that we do not use these terms in this book, except in quotations, or now and then enclosed in quotes to indicate in each instance that the word is used to illustrate an undesirable attitude or to serve some other special purpose. We are not suggesting that you deny or soft-pedal facts; we are advocating that you use neutrally descriptive words, or at most the least negatively loaded words, in discussing the facts. No good ever comes of branding a child or adult as a "defective" of any kind.

In general, so far as you attempt to work with the child and his parents, whether as classroom teacher or clinician, you should at all times be sensitive to the difference between descriptive language and the language of classification, evaluation, and explanation. The term "defective" is often misused, not only to create unfortunate feelings because of its obvious connotations, but also to substitute evaluation and classification for description. The term "defective" is not an effective descriptive word. When you say that a child's speech is "defective," or that the child is "a speech defective," you give your listener no specific information about the child's speech; you do not describe what he does when he speaks, or how his speech sounds or looks. You only tell your listener something about yourself; that is, you reveal your way of classifying the child and his speech, and by means of the classification "defective" you tell your listeners how you feel about the child—but you do not describe for your listener what there is about the child or his speech that you are classifying and evaluating. To do that you would need to use words descriptive of the sounds the child produces, the movements he makes in producing them, and so on. Just so, when you say that a youngster is stuttering, you are talking about the classification you make but you do not describe what you are classifying. Tempted as your listeners

may be to *guess* at your specific meanings, they cannot *know* what you are talking about—outside of yourself—unless you use words that describe what the child does when he talks that you classify as "stuttering." In order to make clear what you mean by a child's "stuttering" you must talk about what the child *does* that you consider distinctive in his way of speaking.

Using our common language as we have been taught to use it in school and out, we talk mostly about what we *are* and what we *have* rather than what we *do*. This is unfortunate for two main reasons. The first is that by using "are" and "have" we often make statements that are unclear and misevaluative. The second is that many of these statements seem to be explanatory in mystical or animistic ways. For example, when a child or adult says, "I am a stutterer," it is not clear what he thinks he *is*. He could mean that he considers himself to be biologically, and so quite hopelessly, different from other people. Maybe he means that he *has* something wrong somewhere inside of him that keeps him from talking, something like "nervousness" or a "tendency to stutter," as though these were forces or things or animisms of some sort, with six sides perhaps, colored blue, and to be found two inches below the liver—or, if not *there, "somewhere."* He might, of course, though he very probably does not, mean only what he could say far more plainly by using a "do" language: "When I talk sometimes I momentarily keep myself from talking by pressing my lips together tightly and holding my breath." By saying what he does, he would be helping himself as well as his listeners —but himself most importantly—to see what he must do differently, or what he must avoid doing, in order not to interfere with his otherwise normal speaking activity. When he tells himself that he *is* a stutterer, or that he *has* a tendency to stutter, he tends to increase both his befuddlement and his despair. He not only says nothing about his problem that clarifies it and helps him to understand it better, but he also says something about it that discourages him. That is, he tells himself that his difficulty is due to something he *is* and something he *has*, and it does not seem easy, indeed it may well be felt to be impossible, to change what one *is*, or not to *have* something one *has*. When, however, he tells himself what he *does* that he calls "stuttering," he automatically, or nearly so, implies not only what he should change

in what he *does,* but he also gains hope from the fact that he, like everyone else, has learned to take pretty much for granted that one *can* change what one *does.*

For these very substantial reasons, you should use a "do" language descriptive of behavior much more, and the "are" and "have" language of classification, evaluation, and vague and mystical explanation, far less than you are probably used to doing. And you should, in counseling speech handicapped children and their parents and teachers, help them to learn also to make use of a descriptive "do" language that will enable them more readily to see what they can all do that they have not been doing, and what they should stop doing, in order to be helpful and to foster in the child an improved way of talking. It is especially important that you encourage the child to talk much more about what he does that he might do differently to advantage, and much less about what he, in some unclear and ominous sense, presumably is and has that he feels he can do nothing about. He is far more likely to be "up and doing" if he thinks and talks more about what he does, ought not to do, can do, and should do.

If you talk about your own personal handicaps in words that have meaning for the child, it will do much to establish a bond with him. You are trying to arouse his interest, his hope, and a desire to do something, to bring the problem out into the open, to talk about it and work on it. You can suggest that he can be thinking about it. It's going to be fine working with him. He's to be sure to come and talk with you any time he wants to. Maybe you'll be busy sometimes, but you're sure he'll understand that, and you'll always be glad to sneak a minute out of the day any time you can to talk some more.

There are few children who will long resist this sort of friendly human approach. From such a beginning most children will proceed to an increasingly frank attitude toward their speech problems and a growing desire to work objectively on them if only they are given the essential information, methods, and encouragement.

Teasing Finally, there is the problem of teasing. The teacher who proceeds according to the above suggestions and the principles presented throughout this chapter is not likely to have much

trouble so far as teasing is concerned. Teasing flourishes where the speech difficulty is coyly avoided, hushed up, and treated with a false philosophy of misguided pretense that it doesn't exist. There is no other target for teasing quite as inviting as an ostrich with its head in the sand. Teasing withers and decays when met with frankness, a matter-of-fact admission of imperfection, and a hopeful attitude that something should, can, and will be done to improve the situation. The teacher who can get this across to the speech handicapped child—and a teacher who is frank and objective about her own personal characteristics can do it better than one who is not—will provide him with the most effective weapon against teasing he could have.

Should you, as a teacher, ever talk to the class about a particular child's speech difficulty? If you do, should you do it when the child is present? The teacher who views her job as that of developing the child as a person, rather than teaching a specific skill or subject, will find these questions more or less pointless. Dozens of times a month such a teacher will go off onto little philosophizing tangents, indulge in reflective comments on happenings in and out of the classroom, and in general teach wisdom and character along with arithmetic or geography. In the course of "teaching herself" in this way it would be strange if she were to avoid entirely any reference to her own and the pupils' problems and shortcomings, the attitudes that might be taken toward them, and things that might wisely be done about them. Of course, she will speak now and then to the class about speech problems, usually speech problems in general, as well as other handicaps and difficulties in general, and occasionally, if there is anything kindly or helpful to be achieved by doing so, she will refer directly to Wilbur's lisp, Jane's nasal quality, or Bill's stutter—and to Jim's lame leg and Sally's acne, as well as her own arthritis. She will find this to be a particularly effective way to build good group morale, to give the children a reassuring sense of what they have in common, and to get the class behind Wilbur and Jane and Bill in their efforts to be more comfortable with their speech deviations and to work toward improvement.

In addition to this you will find, perhaps, that it will pay now and then to single out the ringleader in a class that tends to tease a particular child and to talk with this ringleader, not as though

he were a scoundrel, but as though he were what he is in fact, a leader. As a leader, he is in a position—which he enjoys and from which he gains a feeling of responsibility—to be more helpful to the speech handicapped child than any other single pupil in the class. By arousing his sense of obligation and protectiveness, you can kill two prize birds with one stone. You will be adding materially to the ringleader's training for leadership, and you will be making it practically certain—if the speech handicapped child is psychologically able to cooperate at all—that the teasing will be stopped.

How to react to a child in difficulty All that has been said in this section can best be concluded by summarizing it in the form of a brief decisive answer to the question that is probably asked by teachers more often than any other where speech handicapped children are concerned: What should one do when a child speaks so indistinctly he cannot be understood, or when he stutters so badly that it seems he just can't go on?

If the child believes that your feeling about him as a person is not good, it doesn't matter what you do. It will be wrong. If the child believes that your feeling about him as a person is good, it doesn't make any difference what you do. It will be all right. Children seldom, if ever, are deceived about our deeper attitudes toward them. They are as sensitive as puppies to postural tensions and tones of voice. The teacher who has grasped thoroughly what this chapter contains, and who has made it part and parcel of her reflex behavior, will have attitudes toward speech handicapped youngsters that will show through in friendly facial expressions and vocal intonations. In responding to a child's difficult speech and wavering poise, she can trust herself to do "the right thing" without consulting a handbook.

THE CLINICAL POINT OF VIEW

What has been presented in this chapter may well be thought of as the clinical point of view in education. It is the point of view that in various forms and degrees is representative of practically

all special education teachers, child psychologists, speech clinicians, and others who are driven by the very nature of their work to focus attention on individual children and to view each child in relation to the forces within himself and in his environment that are aggravating his problems or keeping open the door of hope for him. Surely, this point of view with all its heartening consequences is the greatest single contribution of speech pathology and the other varieties of special education to the American school system as a whole. To the extent that the clinical point of view is functioning in the nation's classrooms, speech clinicians and their fellow workers for the handicapped have enriched American education at all its levels and in all its branches.

Seldom, if ever, has the clinical point of view in education been more crisply and eloquently expressed than in the following passage from *Differences Which Matter: A Study of Boys and Girls,* by Hildred Schuell. The author, one of the great research scientists and clinicians in speech pathology, has also been an unusually effective teacher, with an extensive background of classroom experience as well as clinical work. She is uniquely qualified to make this statement concerning the clinical point of view and its place in classroom teaching:

> The clinical point of view can be stated simply. Our schools have failed too many children. When we dismiss a child with a label—a misfit, or a failure—we are making him a potentially costly and dangerous member of society. When deviations occur from acceptable forms of behavior, from normal school progress, or even when a child fails to perform at the level of his ability, it is necessary to find out the contributing conditions—the inhibiting factors or sources of conflict. Punishing the child is seldom an answer—never the complete answer. Indifference, lassitude, school failure, and undesirable "conduct" are symptoms that something is wrong for the child; they are pleas to adults for understanding and help. They are evidence that the child himself has not been able to find adequate ways to satisfy his needs for security, affection, and social approval. He is in trouble, and the situation will become graver, more serious, if he does not receive help. There is nothing new in this statement. It is fortunate for society that this is and has been a thing which good teachers everywhere have instinctively known, and which has consciously or subconsciously guided them in their associations with children. But sadly, it is not a universal point of

view, and to the extent that it is not, education fails to perform both its individual and its larger social functions.

Accordingly, many earnest and conscientious parents and teachers engage in a never-ending conflict with the young. With sincerity, good intentions, and zeal they go about the business of detecting lapses and errors, bringing them triumphantly to light, forcing confessions, tearful admissions or defiance, and promises which can never be kept. And they feel that they have won a sort of moral victory over a confused and bewildered child whose problems they have not even attempted to understand. The child feels ashamed and resentful, and what he understands is that the adult is his enemy. He goes out bruised, his confidence and self-respect shaken. He will be more evasive in the future or he will retaliate in whatever way he can.

The findings of clinical psychologists regarding conditions which favor growth and adjustment, and the findings of experimental psychologists regarding the conditions under which learning tends to take place are either unknown or disregarded by thousands of well-meaning teachers and educators who have lost sight of the child in their thinking. Their attention is fixed upon a course of study or a set of rules. They set standards which are unrealistic or meaningless to the child. They assign absolute and arbitrary values to success and failure, intelligence and stupidity, industry and laziness, even to worth and worthlessness, and categorize pupils in these terms. They deal out criticisms, disparagements, and penalties righteously, and although they might, it would seem, by their own experience or observation, become aware of the frustration which is the chief consequence of such methods, continue to expect pupils to find them salutary. It would seem that all their education has not given them the ability to make observations or evaluate experience; more probably they have not been encouraged to do so. In some situations it might even be a dangerous thing for a teacher to do, if she were concerned about keeping her job. This in itself may well be considered a disturbing commentary on our educational procedures.

Whatever she may say, the teacher whose main objective is uniformity of discipline or standardized achievement does not really like children and should not be teaching. Any teacher who considers her pupils inferior in worth to herself for any reason—social position, "cultural" background, intellectual capacity, or any other artificial standard, is herself so limited, so immature in her thinking, or so personally maladjusted that she should not be considered for a teaching position. It is not through such individuals that a democracy can function, or that the tolerance, mutual understanding, and good will essential to the demo-

cratic way of life can be demonstrated. It is only the teacher who knows that washed or unwashed, black, white, brown, or yellow, whole or crippled, from whichever side of the tracks and whatever kind of homes, her pupils are human beings with infinite potentialities for good, which must be discovered and nurtured, who can realize her function as an educator. . . .

When cases are cited, a common response is, "But that is an unusual case." To some degree this is often true Each case is an individual one, and so to some extent unique. But the numbers of children referred yearly to school psychologists, behavior clinics, reading clinics, child welfare stations, psychological clinics, or institutes for juvenile research are not inconsiderable. In fact they are staggering. These are, moreover, the hopeful cases, the ones for whom help was available, and, for the most part, for whom it was sought while there was still a good chance that it might be effective in preventing the development of more serious maladjustments. If you add to these the gifted children whose abilities were never challenged, grade failures, pupils who leave school when they have passed the age of compulsory school attendance, those referred to juvenile courts and committed to corrective institutions, and those who appear before criminal courts or enter mental hospitals as adults with histories of maladjustments stemming from childhood, the figures are disheartening. No one who has dealt with these cases, or who has any information about the kinds of conditions under which these maladjustments tend to develop, can be so naive as to suppose "correction" to be of more use than aspirin for a headache whose cause remains undetermined and unaltered.[47]

Here is one of Dr. Schuell's "brief reports of cases," one that is not likely ever to be forgotten by anyone who reads it slowly, so as to feel, in addition to understanding, its meanings.

Miss A brought a small nondescript girl from her classroom to the speech correctionist. Thrusting the child forward she stated that she thought the little girl stuttered. She added that she wouldn't waste much time with Emily, however, because she belonged to the Blank family, and everyone knew what they were.

Miss A considered herself a woman of refinement and culture. She had a reputation for being a thorough and conscientious teacher. What personal insecurities and false evaluations led her to make pets of "nice" children and despise the less favored would require further study. Not many teachers would, it is hoped, be guilty of such supreme disregard

[47] Schuell, *op. cit.*, pp. 1–3.

for a child's sensitivity and personal dignity as Miss A was in this instance, which is admittedly a shocking one. However, if that is the way a teacher reacts to her pupils, if it is the way she really feels, the child will know it anyway, and that teacher is directly and personally responsible for the unhappiness of the child and whatever maladjustments develop from it.

Emily was not a "stutterer," although Miss A was well on the way which might have made her one. Her hesitations and repetitions were merely the expression of her insecurity and anxiety in that classroom. They disappeared when she had a teacher who gave her friendliness and encouragement. A year later the small "stutterer" was chosen for a leading part in a children's play because she "stood so straight and had such a nice low voice." Dressed as a princess and radiant with happiness and pride she was a different person from the abject and cowering little girl of the year before. Miss A herself inquired innocently, "Who was that lovely child?"[48]

Dr. Schuell presents other cases too, and the cases she describes are representative, each in its own way, of thousands upon thousands of children in our schools who are being misunderstood and psychologically wounded over and over again—or who are being strengthened day by day through the wise and gracious kindness of teachers who are themselves enriched by the help they give. Some of these children bring their handicaps with them to the kindergarten or the first grade; others acquire their handicaps after they enter the schools. Among them are the children with impaired or difficult speech. For these as for all the others, every classroom teacher is not only a teacher of speech and a psychologist, but she is also an example of a person to be modeled after or rejected, whether she means to be or not and for better or for worse. This book is dedicated to the conviction that it can be for the better, in heartwarming measure, better for the children and better for their teachers.

[48] *Ibid.*, pp. 3–4.

THREE

DISORDERS OF ARTICULATION

Among the various kinds of speech disorders that the teacher will encounter in her classroom, by far the most common are those which we call disorders of articulation. Speech surveys in the public schools have generally indicated that approximately three out of every four speech problems belong in this group. From the standpoint of numbers, therefore, articulation disorders are deserving of special attention and consideration by the classroom teacher.

WHAT IS A DISORDER OF ARTICULATION?

Children who have difficulty in articulation do not produce all of the speech sounds in the usual, accepted manner. Hence, their speech tends to call attention to itself and in severe cases may be very difficult to understand or even unintelligible. These speech errors or misarticulations may take one or more of several forms. Usually, however, all of these errors may be conveniently grouped

under one or more of the following three classifications: (1) omissions, (2) substitutions, and (3) distortions.

Omissions Errors involving the omission of certain sounds occur more commonly in the speech of younger children than of older children. Youngsters who make errors of this type do not necessarily do so consistently. In general, a consonant occurring as the final sound of a word is more likely to be omitted than is the same consonant when it begins a word or occurs in the middle of it. But when two consonants are blended together (such as *s* and *t* in "stop") one of the two may often be omitted, irrespective of the position in the word in which the blend occurs. A small child with badly impaired articulation may have no final consonant sounds at all which resemble those found in adult speech.[1] But he will generally have a few in the initial and medial position of words. Whole syllables may be omitted. If his entire consonant repertory consists of only a few sounds, one may get such a pattern of omissions and substitutions as the following: "Tă ōō ûhtă? Mē tā, dătty dah tĭttûh tĭttûh ă ō" for "Can't you understand? Me say, Jacky got little sister at home." It is apparent that such omissions and substitutions can render a child's speech almost completely unintelligible even to the skilled listener. One does not often find misarticulations as severe as this, but even a few such errors can add considerably to the distorted character of a child's speech.

Substitution errors Substitution errors, like omissions, are relatively common in the speech of small children. The little boy who says, "I thwew a wock at the wabbit," illustrates a common error of substitution. He is substituting a *w* sound for *r*. Some other common substitutions are: *w* for *l*—"Weave me awone Biwy!" for "Leave me alone, Billy!"; *t* for the voiceless *ch* sound in words like "chew" and *d* for the voiced consonant *j*, as in "Dacky can't cat me!" for "Jacky can't catch me!"; *f* for the voiceless *th* sound of "bath" and *v* for the voiced *th* of "mother," as in

[1] Very young children sometimes substitute a peculiar stoppage of the breath stream in the larynx for certain consonants in both the medial and the final position in words. Although this is not a normally accepted consonant sound in standard English, it tends to be consonantlike in the way it is formed.

"Muvver, I hurt my fumb!" These by no means exhaust the possibilities. In the speech of some small children many such sound substitutions may occur. Often they are inconsistent; a child may frequently substitute one sound for another which he can produce easily, and then substitute that sound for still a third one. Or he may omit a certain consonant in one word, substitute a different sound for it in another, produce it quite correctly in a third word. In an extreme case a child may have mastered the production of only a few of the consonant sounds, which are then substituted more or less irregularly for all the rest. Substitution errors may also be found in the speech of some older children and adults, but such errors are usually fewer in number and much more consistent. The 15-year-old who says "For Peteth thake, ith it thikth o'clock already?" is likely to be consistent in substituting the *th* sound for *s* or *z*.

Distortions Distortion errors tend to be somewhat more regular and consistent and to occur with greater relative frequency than omissions in the speech of older children and adults. Whereas a small child may often omit a sound entirely, or substitute another sound for it, an older child will more frequently produce something which approximates the normal sound but which by comparison with the usually acceptable standard would have to be regarded as distorted. One of the most commonly distorted sounds is the consonant *s*. Because the positioning and shaping of the tongue with relation to the palate and teeth are so critical for this sound, it can be distorted in various ways. Some faulty *s* sounds have too much of a hissing component, others have a definite whistling character, while still others, particularly when the air is allowed to escape over the sides of the tongue, have an unpleasant mushy sound, as though the speaker had an excessive amount of saliva in his mouth. The *s* is not the only sound, of course, which can be distorted. The *z* can be altered in much the same manner as the *s;* distorted *sh* and *ch* sounds occur with some frequency; *v* is sometimes produced between the lips, instead of between the lower lip and upper front teeth; and so on.

The above discussion has gone into some detail, not in order to give any sort of complete description of all possible misarticula-

tions, but rather to provide the reader with an understanding of the general nature and some of the variations of articulatory errors that he may encounter, and also to make clear the particular sorts of speech faults that are to be considered in this chapter. Not included as articulatory errors are such common speech imperfections as "jist" for "just," "git" for "get," "perty" for "pretty," and so on. These are errors in pronunciation, not articulation. The pupil who makes them can produce the sounds required for correct utterance of the words. Hence, he is not a speech handicapped child in the sense in which that term is ordinarily used, and he is not properly to be referred to a speech clinician.

To summarize, the child with an articulatory problem has difficulty in producing speech sounds. His errors are not always consistent. In fact, they may be highly inconsistent: in certain words and in certain phonetic combinations he may produce acceptably a sound which he fails to produce adequately at other times. His errors may take the form of omissions, substitutions, or distortions, or any combination of the three. Misarticulations may be few or many, ranging from a single distorted sound made by a child to those of the child whose whole sound repertory consists of only three or four consonants and a half-dozen vowels, perhaps, and whose speech is almost completely unintelligible. The most important single fact about the speech of children with articulation problems is that they are not able to produce consistently and effortlessly the ordinary, accepted sound patterns of speech. Therefore, their speech sounds different from that of the normally speaking child.

MATURATION OF ARTICULATORY SKILL

In kindergarten and the primary grades an important question arises as to what sound errors are to be regarded as speech disorders. Is the speech of Jacky, age 5, to be regarded as needing correction because he habitually says "thish" for "fish," and "thirst" for "first"? What about David, age 8, who still says "wed woses" for "red roses"? At what age should we expect a child to be able to produce acceptably all the speech sounds of the

language? Moreover, what is the likelihood that a child whose speech contains such errors will "get over it" without any special attention? Don't many children when starting school make such errors and don't they "outgrow them" or learn better speech habits without the ministrations of a speech clinician? It is the purpose of this section to provide information which may help to answer these basic questions.

Age of sound mastery varies Studies of the speech of young children have shown that there is considerable variability in the age at which complete mastery of sounds occurs. Children who are particularly accelerated in development of articulation skills may accomplish complete mastery at 3 to 4 years of age. Girls have generally been found to surpass boys slightly in speech development. On the other hand, systematic studies have shown that substantial numbers of children may still be expected to have some difficulty with certain consonant sounds when they are 7 to 8 years of age. Results of different studies show some variation depending on such factors as the sample of children studied (socioeconomic level, occupation of parent, and such), the testing procedures used, and so forth. Johnson, Darley, and Spriestersbach have summarized the results of certain of these studies in the form of tables which are very convenient for reference.[2] A particularly well controlled study of speech development is the one by Templin.[3] Templin's data show that children make a rather large leap forward in the development of articulation skills between the ages of 3 and 4. Thereafter, the scores on their tests increase more gradually with a rather steady increment through the 7-year age level. Girls, and children classified in the upper socioeconomic group, were achieving rather high scores on her test by the age of 7. Boys, and children classified in the lower socioeconomic group, did not reach the same level of articulation skill until the age of 8. These results indicate that the process of development of articulation skills is by no means completed when

2 Wendell Johnson, Frederic L. Darley and D. C. Spriestersbach, *Diagnostic Methods in Speech Pathology* (New York: Harper & Row, 1963), pp. 101–103.

3 Mildred C. Templin, "Certain Language Skills in Children," in *Institute of Child Welfare Monograph Series* (Minneapolis: University of Minnesota Press, 1957), no. 26.

a child enters school. It is to be expected that in grades one and two, as well as in kindergarten, there will be substantial numbers of children who will have some difficulty in articulating certain consonants. By the end of grade three, however, the average child should have attained a reasonable degree of skill in speech sound articulation, even judged by adult standards.

In a study of 2,000 Indiana school children which applied a rather strict criterion of correctness of articulation, Roe and Milisen found substantially higher numbers of children in the primary grades whose speech contained articulation errors than were found in the studies previously cited.[4] Their data are of particular interest with respect to the matter of continuation of development of articulation skills after children enter school. They found a rather regular and marked decrease in the frequency of articulation errors through the first three or four grades, even in schools where there was no speech correction program. Both the number of children found to make such errors and the number of misarticulations per child decreased rather markedly during these years. The largest decrease was found for the two-year period from kindergarten to second grade, with a smaller decrement between the second and fourth grades.

The questions posed at the beginning of this section must, therefore, be answered by saying that it is common to find children still misarticulating some of the more difficult consonant sounds in the primary grades and that many children tend to "get over" this problem. As a consequence of continuing maturation, plus the favorable learning environment of the schoolroom, most children develop completely adequate articulation skills by the time they are second graders, without the special help of a remedial speech program.

Does this mean that no children of this age group (5 to 8 years) should be regarded as needing speech correction? Does it mean that the speech clinician may safely bypass the primary grades? Some persons, including some educators and even a few speech clinicians, have interpreted these data to mean just that. It is our judgment that the data are better interpreted in another way.

[4] Vivian Roe and Robert Milisen, "The Effect of Maturation upon Defective Articulation in the Elementary Grades," *Journal of Speech Disorders* (1942), 7:37–50.

To be sure, a considerable number of these children probably should not be regarded as having "speech handicaps." Their speech errors are not to be thought unusual or disproportionate for their age group. For them the learning and developmental processes of achieving relatively error-free articulation have just not been completed. On the other hand, some (fortunately a relatively small number) have articulation so faulty that it stands out and seems different even at those grade levels where some articulation errors tend to be the rule. These children are definitely in need of special help, and the help they need should not be postponed until everyone else of their age level has developed adequate speech by adult standards. Such youngsters are clearly handicapped by their inadequate speech in an educational system which places a premium on oral expression. Such a child is frustrated and embarrassed by difficulty in making himself understood. He may be looked upon as backward by his playmates, the neighbors, sometimes his own parents, and even his teachers. It is small wonder that such a child may have more than average difficulty in learning to read and that he may become educationally retarded. Indeed, a child so frustrated and handicapped may well develop into a behavior problem in the schoolroom or at home and eventually become a relatively helpless educational misfit. The experience of a boy called Joe, although admittedly somewhat extreme, illustrates what may well happen in some measure to many such youngsters.

Joe was referred to the speech clinic through a social welfare agency. He had come to the attention of the agency because of persistent truancy. He was reported by his teacher to be incorrigible. Although 13 years of age, he was in the fourth grade and seemed unable to do the work even at that level. His educational history revealed that he had had trouble in school from the very first and had generally been considered "feeble-minded" by his teachers. His speech had undoubtedly improved since he first entered school, but it was still impaired enough to make him somewhat difficult to understand.

When Joe was first seen at the speech clinic he was given an individual mental test as a part of his routine examination. This revealed that instead of being mentally retarded he was very

nearly average in intelligence. He was referred to the reading clinic, where examinations indicated that he was barely able to read at a level equivalent to that usually attained at the end of the second grade.

Boarding home placement was arranged for Joe, and he was assigned to the special room of one of the local elementary schools. Arrangements were made for him to come daily to the speech and reading clinics for special remedial instruction. By the end of one year Joe could correctly produce all speech sounds in drills and exercises when he was giving close attention to each word; his ordinary speech was quite intelligible to anyone, although occasional errors could be detected in his conversational speech because some of the newly-learned sounds had not yet become entirely automatic. Reading proficiency had been increased from second-grade level to that of fifth grade. His work in arithmetic, which had been seriously deficient, had markedly improved as a result of the gain in reading and of help from his special room teacher. Although he had tended to be somewhat sullen and aggressive in the early part of the year, at no time did any important behavior problem develop. No single instance of truancy was reported. Of course no one can say for sure how much of Joe's problem was an outgrowth of his speech deficiencies, but it seems virtually certain that they had contributed materially to the erroneous impressions his teachers and others had formed—that here was a backward, "mentally deficient" child with whom it was useless to spend much time. That Joe had reacted to such negative attitudes and neglect in ways which seemed to reinforce and confirm the incorrect diagnosis of his problem is hardly surprising.

Fortunately, this case is unusual, but because it is, it spotlights the handicapping consequences which may develop for the child who has communication difficulties caused by faulty speech. Most children with faulty articulation have less severe speech problems than this and their educational and social consequences are therefore likely to be less dramatic. Nevertheless, there is little doubt that some measure of Joe's experiences is shared by many children who have articulatory problems which fail to receive early and adequate attention.

Bases for judgment It is not an easy matter to decide whether or not a given child in the primary grades should be regarded as having impaired articulation. As previously mentioned, the work of Templin has provided some valuable normative data to which a given child's speech may be compared,[5] and the procedures set forth in the book by Johnson, Darley, and Spriestersbach provide guidance for testing a child's performance and interpreting the results of the tests.[6]

A word of caution may be in order, however. It should always be remembered that scoring on a test of this kind is necessarily more subjective than on most tests for which we are accustomed to using norms. The criteria by which a particular examiner judges various sounds to be faulty or normal play a considerable part in determining how a child's performance will be evaluated. Moreover, we need considerable information in addition to the frequency of error (important as this is) to make the decision concerning whether or not the misarticulations characterizing a child's speech are significant enough to require special attention. Such matters as the consistency of his misarticulations, the type of error produced (omission, substitution, or distortion), and the ease or difficulty that he has in imitating correct production of sounds which he may habitually misarticulate, are all cues to how much the individual may need special help. Also relevant is the question of how both the child and those around him (parents, teachers, and others) evaluate the significance of his deficiencies in articulation skills. If these deficiencies are evaluated as constituting a significant problem, particularly one which may cause embarrassment or frustration, this fact should not be overlooked.

In the final analysis, therefore, the decision requires a careful clinical judgment in which all relevant evidence is weighed, and cannot be based only on a relatively simple comparison of test results with normative data. If at all possible, the classroom teacher should turn to the counsel of a person who is experienced in making such judgments, namely, a trained speech clinician. The teacher should do this to avoid the error of calling undue at-

[5] *Op. cit.*
[6] *Op. cit.*, chap. 4.

tention to, or causing undue concern about, misarticulations that are likely to be eliminated without special help and without significant consequences, and, equally important, she should do this to avoid the error of neglecting a problem for which the child badly needs special help.

CAUSES OF ARTICULATORY DISORDERS

Why some children fail to develop good speech at the same age as their playmates is not always easy to explain. In some cases the causes are complex and varied. In others they are so obscure that we cannot always be sure exactly which factors have produced the deficiency. One reason is that articulation disorders are relatively varied and complex, although they seem more or less alike at first glance. More careful analysis will show their varied nature and the possibly still more varied nature of their underlying causes.[7] However, we do know a considerable amount about some of the important conditions related to poor articulation. In general, the known causes may be divided into three broad classes: (1) constitutional factors, (2) faulty learning, and (3) emotional maladjustment. Intelligence also is a factor.

Constitutional factors Some of the more severe organic conditions which tend to result in speech disorders, such as cleft palate, cerebral palsy, and impaired hearing, are considered in other chapters in this book. Here we shall consider constitutional factors of a generally less severe character which may have an adverse effect on articulation.

DENTAL ABNORMALITIES. Good teeth are not only essential to the proper chewing of food and to the winsomeness of a happy smile; they are also important from the standpoint of speech. The normal mode of production of a number of consonant sounds requires at least reasonably good dentition.[8] Among these sounds

[7] *Cf.* T. David Prins, "Analysis of Correlations among Various Articulatory Deviations." *Journal of Speech and Hearing Research* (1962), 5:152–160.

[8] Some knowledge of the physiological mechanics of normal speech sound articulation will assist materially in understanding the possible effects of dental deficiencies and other oral abnormalities on the production of speech sounds. Hence, for the reader who does not already possess such knowledge, a brief discussion of the mechanics of speech sound production has been included in Appendix V.

are: *f* and *v*, in which the lower lip is required to make contact with the upper teeth; the two *th* sounds, as in "think" and "these," in which the tongue tip is either thrust slightly between the upper and lower front teeth or placed against the inner surfaces of the upper teeth; and *s, ch, sh, zh,* and *j,* which require that the breath be directed across the cutting edges of the teeth in particular ways. If the teeth are badly spaced or misaligned, or if there is poor occlusion (spatial relationship) between the upper and lower dental arches, considerable difficulty in articulation may result. Figure 2 shows some examples of types of dental conditions which may produce difficulty.

Although such dental irregularities do tend to present obstacles

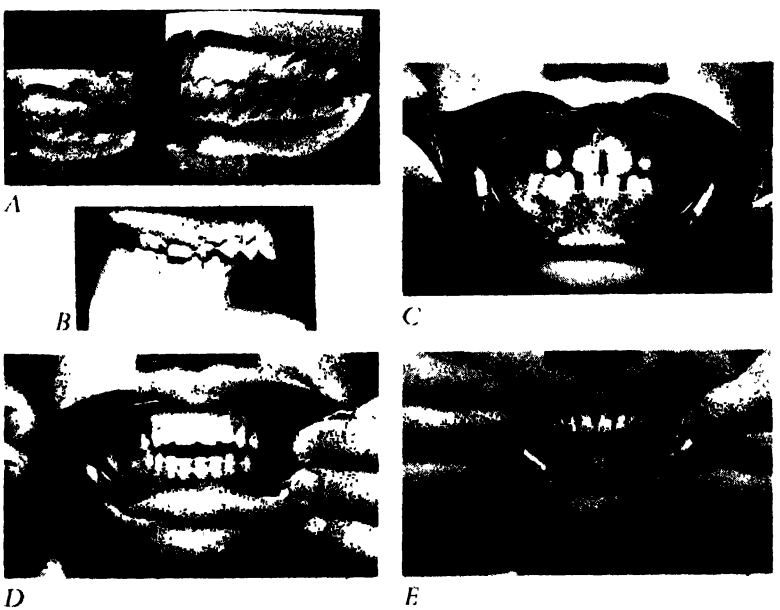


Figure 2. Various conditions of dental occlusion. *A,* Ideal occlusion at 4 years and 19 years of age; *B,* severe over-jet with protruding upper anterior teeth and microdevelopment of the lower jaw; *C,* spacing of anterior teeth in 6-year-old child; *D,* anterior open-bite; *E,* same patient as in *D* after correction of anterior open-bite. (From the collection of Dr. L. B. Higley, formerly of College of Dentistry, University of Iowa, now at the University of North Carolina.)

to good articulation, one should not conclude that they necessarily make normal speech impossible. The tongue, lips, and other parts of the mouth are very adaptable, capable of considerable flexibility of movement, and it is possible to produce normal sounding consonants with articulatory movements that vary considerably from the typical pattern. Many persons have succeeded in developing adequate and sometimes even superior speech in spite of dental abnormalities. The facts are best stated by saying that poor dentition may be a complicating factor which may help to explain why a particular child has difficulty with certain sounds. In a few cases of very severe dental abnormality it may be impossible to produce certain consonants without correction of the dental condition. In the vast majority of cases, however, normal articulation can be achieved in spite of the difficulties imposed by faulty dental structure.

OTHER ORAL IRREGULARITIES. Although perhaps more common than any other, dental irregularities are not the only deficiencies in the structure or functioning of the speech mechanism that can contribute to articulation difficulties. The roof of the mouth, or hard palate, may also be important in this connection. The tongue must establish contact with it in particular ways to form certain of the speech sounds in the normal manner. If the hard palate is unusually high and very narrow the tongue may have difficulty in making these required contacts in the normal way, and certain speech sounds may be distorted as a consequence.

The tongue is perhaps the most important of all the articulatory structures. It is quite obvious, therefore, that faults of structure or function which interfere with its movements may result in misarticulations. In very rare instances an individual's tongue may be so large in relation to the dental arches that he has difficulty making the rapid, precise movements required for good articulation. In a few cases there may be poor muscular coordination. For example, Prins found evidence of motor incoordination among children whose misarticulations were predominantly sound omission errors.[9] This lack of coordination is sometimes, though not always, the result of a slight paralysis. In such cases the tongue

[9] Prins, "Motor and Auditory Abilities in Different Groups of Children with Articulatory Deviations," *Journal of Speech and Hearing Research* (1962), *5*:161–168.

cannot make the necessary movements to the teeth, the gum ridge, and the hard and soft palates which are essential to normal articulation. The individual may have difficulty also in grooving the tongue so as to direct the air stream properly for the *s, sh,* and similar consonants.

The condition known as "tongue-tie" is probably not as common as was once thought, but it does occur occasionally. In this condition the little web of tissue lying underneath the front part of the tongue, by which the front of the tongue is attached to the floor of the mouth, is either too short or is inserted in the tongue too close to the tip. As a consequence, the movements of the front part of the tongue may be too restricted for purposes of good articulation. Such judgments should, however, be made with caution. One needs to avoid the tendency to look too hard for a structural explanation for an articulatory problem. If the child has been able to nurse, can extend his tongue between the teeth, and can touch the upper gum ridge with the tip of his tongue, the judgment that he is "tongue-tied" is probably irrelevant so far as his ability to speak is concerned.

These are the most common (though not all) types of mouth condition which may interfere with good articulation. Mouth injuries have been known to cause difficulty. In general, almost any very marked departure from the normal structure and function of the oral mechanism may interfere with speech, although it will not necessarily do so.

As Johnson, Darley, and Spriestersbach have stated, ". . . it is frequently difficult to pin a particular type of misarticulation to a particular structural deviation in a given instance. A given structural deviation may be of significance only if it occurs as one of a constellation of deviations."[10]

In evaluating dental and oral deviations one should also be constantly aware that interpretations must be made in terms of the relationship of the particular deviation to the specific sound errors that need to be explained. Bad spacing and faulty occlusion of the anterior teeth will probably be significant in relation to faulty articulation of the *s, z, sh,* and *zh* sounds, but such dental deviations can hardly be significantly related to a substitution of

[10] *Op. cit.,* p. 124.

w for *r*. In general, with some exceptions to be sure, the kinds of departure from normal structure of the oral mechanism that we have been discussing, like dental abnormalities, will constitute complicating rather than disabling factors; that is, they will make production of normal sounding consonants somewhat more difficult but will not constitute insurmountable obstacles to adequate articulation.

AUDITORY FACTORS. Because we normally learn speech by imitating what we hear, and because we are dependent on hearing to provide us with some of the cues to assess how closely the speech sounds we produce approximate the patterns we intended,[11] good hearing is of primary importance to good speech. If a child cannot hear a relatively clear and undistorted version of the speech of others, he cannot be expected to establish normal auditory memory patterns corresponding to the various speech sounds. Likewise, unless he hears a relatively clear and undistorted version of his own speech, he will have more or less difficulty in monitoring his own articulatory efforts. It is obvious, therefore, that a child whose hearing sensitivity is definitely impaired may be expected to exhibit misarticulations as one of the consequences of his auditory impairment. Problems associated with loss of hearing sensitivity are the subject matter of Chapter Eight and will not be considered in detail here, except to note that hearing impairment is one of the possible causes which should be considered in attempting to account for a given child's articulation problems.

Sound discrimination. In addition to the loss of sensitivity to sound intensity that is measured by the usual threshold hearing test, and which we usually mean when we use the term "hearing impairment," there is some reason to think that certain individuals, who would not be thought of as hearing impaired in the foregoing sense, may have a special deficiency in ability to dis-

11 We doubtless make use of tactile and kinesthetic cues, as well as auditory cues, in monitoring or controlling speech, in both phonation and articulation. The present state of knowledge does not permit us to assign an order of importance to these different types of cues for individuals who have achieved a thorough mastery of speaking skills, and it may well be that such an order of importance would vary for different age levels and for different individuals. It seems likely that the auditory cues are of primary significance in the infant who is learning to imitate speech and that these cues may remain primary long after tactile and kinesthetic patterns have become associated with articulatory movements.

criminate among different sounds. Furthermore, there is some basis for believing that there may be a causal relationship between such deficiencies in sound discrimination and difficulties in speech articulation.

One of the types of tests on which differences have been demonstrated in such auditory discrimination abilities makes use of speech sounds as test stimuli. Such speech sound discrimination tests are designed to provide a score which indicates how well a person can discriminate between pairs of consonants which have rather similar sound patterns. The possible relationship of such discrimination ability to the development of normal articulation skills is quite obvious. If a child cannot discriminate among certain consonants, he can hardly learn to produce sound patterns which correspond to them. The hypothesis that some children's difficulties in articulation are related to a disability in speech sound discrimination is a relatively old one and numerous studies have been carried out to investigate such a possible relationship. Until recently, the results of such studies showed considerable disagreement and little clear evidence of a definite relationship.

Within recent years several studies have been reported in which primary grade children with articulatory problems were found to make lower scores on speech sound discrimination tests than children whose speech was free from articulatory errors.[12] The particular nature of the relationship is not altogether clear, however. Specifically, it is not evident that low scores on speech sound discrimination tests are related to some fundamental differences of the auditory mechanism. Instead, the ability to discriminate among complex auditory patterns, such as speech sounds, is doubtless a cultivated, or learned, trait. Cohen and Diehl have shown that scores on speech sound discrimination tests improve from one grade to the next, at least from the first through the third grade.[13] Hence, the deficiency in such ability shown by children with problems in articulation may be evidence of inade-

[12] *Cf.* Julian H. Cohen and Charles F. Diehl, "Relation of Speech-Sound Discrimination Ability to Articulation-Type Speech Defects," *Journal of Speech and Hearing Disorders* (1963), *28*:187–190; and Ernest L. Kronvall and Diehl, "The Relationship of Auditory Discrimination to Articulatory Defects of Children with No Known Organic Impairment," *ibid.* (1954), *19*:335–338.

[13] *Op. cit.*

quate learning, a subject which will be discussed at more length in the next section.

Pitch discrimination. Another type of sound discrimination ability has been studied rather extensively in relation to articulatory problems of elementary school children. This is the ability to make discrimination among sounds which differ only slightly in pitch. The results of this research are somewhat inconsistent, also, but several recent studies have agreed in showing poorer pitch discrimination abilities for children with articulation problems or retarded development of articulation skills than for children whose articulation and articulation skills are considered normal.[14] Pitch discrimination ability, although doubtless subject to improvement through practice, would seem to be more likely relatable to some fundamental characteristics of the auditory system. The fact that Sommers, Meyer, and Fenton found significant differences among older children (third grade and up) also suggests a difference that may not be entirely a matter of learning or maturation.

In summary, the development of adequate articulation skills requires an auditory system that is capable of making the necessary discrimination among speech sounds. Children with definite impairments of auditory sensitivity are obviously somewhat handicapped in this respect. In addition, there is some evidence that the ability to make the necessary discriminations between sound patterns which is required for good articulation may not be a simple matter of sensitivity to sound intensity. Children who have normal hearing, as measured by intensity threshold tests, may, nevertheless, lack adequate ability to discriminate among complex sound patterns, such as speech sounds, and to discriminate fine differences in pitch. Such deficiencies have been demonstrated for groups of children with articulation disorders.

Faulty learning Although constitutional factors, such as those just discussed, may be important in certain instances, in the

[14] See Ronald K. Sommers, William J. Meyer, and Ann K. Fenton, "Pitch Discrimination and Articulation," *Journal of Speech and Hearing Research* (1961), *4*:56–60; Charles V. Mange, "Relationship between Selected Auditory Perceptual Factors and Articulation Ability," *ibid.* (1960), *3*:67–74; and Wesley H. Bradley, "Some Relationships between Pitch Discrimination and Speech Development," *Laryngoscope* (1959), *69*:422–437.

majority of articulatory cases no significant organic factor can be found. In most cases the articulatory mechanism and the auditory monitoring system appear to be quite normal. In still others, such deviations as may be found are too slight to account for the speech difficulties. Hence, we must look further for explanatory factors.

Most articulatory deviations seem to be traceable to no other cause than failure to learn the correct patterns of normal speech. In other cases we know that normal rather than faulty speech might have been developed despite structural deficiencies if strong enough motivation and a favorable learning environment had been provided. Milisen has stated that, except for cases in which a severe neuromuscular disorder is present, the one basic cause of all articulatory difficulty is a disruption of the normal learning process.[15]

Even though one may not subscribe to quite so broad a conclusion, it is doubtless true that the most important single cause of disorders of articulation is the lack of sufficiently favorable conditions for the learning of good speech. For various reasons incorrect speech habits have been formed and have become strongly established. The ordinary environmental pressures of home, community, and school do not seem to have been sufficient to counteract them. Children who have "got off to a poor start" in this way sometimes tend to persist in making their speech errors long after most of their contemporaries have developed normal articulation. Such children usually require special attention and retraining if they are to acquire normal speech.

The specific conditions which can produce this faulty learning are varied and complex. A brief discussion of some of the more common ones will show why, in general, all normal children do not learn to speak correctly.

POOR SPEECH MODELS. It is well-established that speech is learned essentially through imitation. Sometimes the speech the child learns to imitate is itself faulty. Occasionally a parent or older child in the family has impaired speech. An example of faulty learning from a poor speech model was shown in the case

15 Milisen, "A Rationale for Articulation Disorders," in *The Disorder of Articulation: a Systematic Clinical and Experimental Approach,* monograph 4, *Journal of Speech and Hearing Disorders,* 1954, 5–17.

of an 11-year-old whose principal trouble was a substitution for the *r* sound. His father, who had accompanied him to the clinic, started the interview by saying, "I b*w*ought (brought) Danny he*uh* (here) because he can't make his *ah* (r) sounds *w*ight (right). The boys at school *ah* (are) beginning to tease him, and I don't want him laughed at all his life like I have been."

LACK OF STIMULATION AND MOTIVATION. Infantile speech habits sometimes seem to persist because there is no motivation to change them, or because there is even positive motivation to retain them. Ordinarily the drive to communicate is so strong, and communication through deficient speech is so unsatisfactory, that the problem of motivation takes care of itself without conscious direction by anyone. Occasionally, however, environmental conditions are not adequate to motivate good speech learning. Sometimes very inadequate speech (by ordinary standards) suffices to meet all the child's needs for communication. Now and then a child is permitted to supplement his inadequate speech with gestures to the extent that he feels no need to develop better speech. Parents and older children who have learned to understand the youngster's jargon may act as interpreters for him to such an extent that even the need to communicate with persons outside the family do not arouse in him any special urge to learn better speech habits. Under these circumstances the development of normal articulation may be so retarded that the child's speech continues to be extremely faulty long after his playmates have sloughed off most of their infantile speech habits.

A somewhat related situation is that in which the child does not receive enough good speech stimulation. He may be so isolated from other children, as well as adults, that he seldom needs to speak. Moreover, under such conditions he does not hear much speech to imitate. Frequently this lack of speech stimulation is a consequence of parental neglect, more often unintentional than malicious.

A case in point is that of Roger, an only child, age 7, who was brought to the speech clinic with markedly infantile speech. He had been slow in all aspects of speech development, although he seemed physically well developed, and no apparent organic cause for the speech retardation could be found. Nonverbal intelligence

tests showed no mental retardation, although he was definitely below average on such verbal items as the vocabulary test of the Stanford-Binet intelligence scale. The interview with the parents revealed that they lived on a farm too large to be managed without hired help. During the period when Roger was learning to talk both parents were actively engaged in field work for long hours each day. Even in the evenings, when the day's work was done, they were too tired to give much attention to Roger. Questioning revealed that they had never read stories or nursery rhymes to him and that there was no close companionship between the child and either parent. Most of the care of Roger was entrusted to a grandmother who lived with the family and looked after a large share of the housework. But she was a partial invalid and so had little time to devote to the boy. He had no playmates, since none of the nearby neighbors had children of his age. His sole companions seemed to be his pets, of which he had a plentiful supply. But his dog provided no speech stimulation and was not critical of his infantile substitutions and omissions or lack of vocabulary.

In short, here was a boy whose whole environment was almost devoid of speech, aside from what little was needed to satisfy his simple physical needs and the meager mealtime conversations in which he was not included. It is small wonder that he had made little progress in learning to talk. He was not much better off when he entered school at the age of 6. The other children thought him queer, and he didn't know how to play with them, so they left him pretty much to his own devices; the teacher hardly knew what to do with him, either. She did, however, take positive steps by talking to the parents and was the main instigator of his trip to the speech clinic.

Emotional maladjustment Since the emotional conditions which can produce adverse effects on speech development are discussed in other sections of this book, particularly Chapters Two and Six, the discussion of them at this point will be relatively brief. There is a discussion in Chapter Six of the parent-child relationships which may result in refusal of a child to talk. Practically everything said there may be applied also to articulatory

deficiencies. The difference is in the degree of the effect produced rather than in the nature of the causal factors.

Much of the evidence for the connection between articulatory problems and unfavorable environmental conditions and parent-child relationships is derived from clinical experience. However, there have been a few systematic investigations of this general problem. In one of the most comprehensive of these studies, Wood collected extensive data for 50 articulatory cases ranging in age from 5 to 14 years, all of whom showed misarticulations. In none of the 50 could the speech problem be attributed to either organic deficiency or low intelligence.[16] Data concerning environmental factors and emotional adjustment of both the children and their parents were obtained by means of psychological tests and extensive case history interviews. In general, the results of this study showed what Wood interpreted as a significant amount of emotional maladjustment among the parents of these 50 children, especially the mothers. Certain salient factors in the homes also were found in a number of cases. Disturbed home membership, as in cases in which both mother and father were working, or in which mother or father had been away from home periodically, or in which the parents had been legally separated, was found in 24 of the 50 cases. Severe child discipline methods were practiced in 22 of the homes. Emotional reactions of parents to the child's speech difficulty were found in 18 cases. Certain effects of these parental maladjustments and environmental influences were indicated by some of the data obtained from the children. Such factors as withdrawing tendencies, sense of frustration, lack of affection, and anxiety-insecurity were discovered in from approximately one-third to two-thirds of the children tested. To the extent that such conditions affect the learning and normalization of speech, they may be regarded as linkages, as it were, between parental maladjustments and the children's faulty articulation.

The most interesting part of this study was that in which the 50 children were divided into two matched groups for retraining. For one group of 25, ordinary articulation retraining procedures were employed. For the other 25, the same remedial speech train-

[16] Kenneth Scott Wood, "Parental Maladjustment and Functional Articulatory Defects in Children," *Journal of Speech Disorders* (1946), *11*:255–275.

ing was given, but, in addition, extensive counseling of the parents was carried on at the same time. This second group was found to improve significantly more rapidly than the first group.

In another study, personality tests were administered to the mothers of children who were classified in several different groups according to their articulation skills.[17] With respect to certain personality traits which these tests were designed to measure, the average score of the mothers whose children were classified in the most severe group (with respect to articulation difficulty) was found to differ from the averages for the other groups of mothers by amounts which were significant in a statistical sense. Their scores were lower (in the direction of personal maladjustment) on the part of the test that was designed to reflect "hostility" and on the items concerned with "emotional stability." It should be noted, however, that none of the test scores of this group of mothers was in the range which would be considered indicative of serious personal maladjustment, according to the test norms.

One should not, of course, overgeneralize from such data. Statistical analyses are necessarily concerned with averages. There were doubtless mothers in the group whose children were judged to have severe articulation problems whose personality test scores were much above average. A statistically significant difference with respect to some trait may often be found between the averages of two groups, even though there is a relatively low correlation between the measure of that trait and the criterion that has been used to divide the individuals into groups.

One should not jump to the conclusion that every child who exhibits a few simple sound substitutions or distortions, or even many such errors, is living in a grossly undesirable home and is being rejected or gravely abused by his parents. Most such children will sing "Home, Sweet Home" with about the same mixed feelings as other youngsters. Yet the classroom teacher will need to be aware of the possible relationship between articulatory problems in children and emotional maladjustment in their parents, at least to the extent of insuring that children who have such problems do not experience still more frustration, anxiety,

17 Phyllis Burgess Andersland, "Material and Environmental Factors Related to Success in Speech Improvement Training," *Journal of Speech and Hearing Research* (1961), 4.79–90.

and disappointment, particularly concerning speech, in the school situation.

Intelligence Before we leave the discussion of causes of articulatory problems a few words should be said concerning low intelligence. Speech imperfections are more frequent among children of low intelligence than among those who are average or above in mental capacity. It is also true that intelligence test scores of children with articulatory deficiencies average slightly lower than those of children with normal speech. Again, however, a word of caution is needed. Such averages can be easily overinterpreted. They do not tell us anything about a particular youngster who has a speech problem.

The fact is that impaired speech may be found at any level of intelligence. Unfortunately, it is all too easy to set down as mentally subnormal the child whose speech is labored, distorted, or unintelligible. That is perhaps the first reaction of the average uninformed person. The dire consequences of such misdiagnosis can hardly be overemphasized. The writers have known children to be refused admission to school on the grounds of "feeblemindedness" when the only basis for the decision was impaired speech, and where later testing of mental ability showed no basis for classifying the child as mentally retarded. Certainly the informed teacher has a responsibility for combating such misjudgment. Just as a mentally subnormal child cannot be dealt with adequately simply by giving him speech correction, even if he needs it, so a child who lisps cannot be handled adequately as a mentally retarded youngster, even if he is one. And he seldom is one.

The point, which is indeed very obvious but can scarcely be overemphasized, is that each child is an individual, who must be evaluated and helped as an individual. One of the kinds of information that will usually be helpful in evaluating a child's speech problem is a good estimate of his intellectual ability. For this reason, when a child is seen in a speech clinic for comprehensive evaluation of his speech problem, an individual intelligence test is a routine part of the examining procedure. The information obtained may help to explain the speech behavior or

it may indicate that he has a speech problem despite better than average intelligence. Either way, proper interpretation of the information should lead to a better understanding of the child who has the problem, and better planning of a program to help him solve it.

MAINTAINING AND AGGRAVATING FACTORS

We have seen some of the conditions which tend to produce articulatory disorders. It is the purpose of this section to point out those factors tending to perpetuate such disorders and, in some cases, to aggravate them. Many of the factors which originally produce the deviations, such as lack of motivation for good speech, structural deficiencies, and the like, also tend, unless corrected, to be maintaining factors. What we are concerned with here, however, are conditions besides the original causes which may operate to aggravate and perpetuate the difficulty.

Anxiety and frustration in speech situations Even under the best of circumstances the child with faulty speech is almost certain to experience some frustration and anxiety in speech situations. This may not be evident in the very young child, particularly if there has been a reasonable attitude of tolerance and acceptance of his problems on the part of parents, friends, and playmates. But sooner or later, if the difficulty persists, it is likely to call attention to itself and become a matter of considerable concern to him as well as to others. A certain amount of such concern is of course necessary as motivation for improvement. However, it must not be magnified to the extent that the youngster becomes anxious about all speaking and constantly feels frustrated by his failures.

Conditions which produce such anxiety and frustration tend to increase as the child becomes older. To begin with, speech errors generally become more noticeable as the contrast with the speech of other children of his age group increases New playmates may not accept his speech as readily as the earlier ones did; they may, in fact, make it an object of ridicule. As the child becomes older, parents tend to become increasingly concerned and to show it in

numerous ways. Furthermore, unless the teacher is particularly skillful and understanding, the child experiences numerous frustrations and failures in the classroom which are due to his speech —or at least he feels that they are. He may be corrected over and over again by well-meaning parents and teachers, teased by other children, and continually made to feel failure and inferiority in numerous ways.

Such constant frustration and anxiety may not only add emotional and behavior difficulties to the already existing speech problems but also tend to maintain the speech problem itself and to increase its severity. No lengthy argument is required to demonstrate that these are not the conditions under which learning takes place easily. The distintegrating effects of anxiety are too well known to require restatement here. Moreover, speech is more gravely affected than most other kinds of behavior because it requires such nicety of neuromuscular coordination. The child learns, to be sure, but mainly that each time he opens his mouth to speak he is likely to be hurt in some fashion, that whenever he is required to speak well he can expect to fail. But he does not learn from this how to correct his errors and speak in a more acceptable fashion.

Discouragement As a consequence of the despondency which sometimes results from repeated failure and frustration, the speech difficulty tends to be aggravated. One boy known to the authors developed the habit of mumbling his way as rapidly as possible through all speech situations. When he mumbled, his speech errors were not so apparent. Of course, he was very difficult to understand and his speech was anything but communicative. But he seemed to prefer that kind of failure to making his misarticulated sounds unpleasantly prominent. After all, why not? If one is going to fail anyhow, why not take the least unpleasant form of failure?

Danny, the 11-year-old previously referred to who had trouble with the articulation of *r*, had become thoroughly convinced that it was completely impossible for him to articulate a normal *r* sound. With tears in his eyes he told the examiner that he knew he couldn't learn to say *r* and he didn't see any use in trying. At

first he refused even to make an attempt. When the examiner finally succeeded in winning his confidence, so that he would follow directions concerning placement and movement of his tongue, he produced a fairly good *r* after four or five trials. The tears came to Danny's eyes again, but this time there was a smile to go with them.

An 18-year-old girl whose speech problem was complicated by bad dental occlusion was astounded when it was pointed out to her that certain errors were not related to her dental condition at all, and that there was no reason why she couldn't learn to produce these sounds with very little difficulty. She had assumed that, because of her crooked teeth and open bite, she could not possibly improve her faulty articulation and had long ago given up the attempt.

TREATMENT OF ARTICULATORY PROBLEMS

General examination procedures The first step in treating an articulatory disorder is to become thoroughly familiar with the individual who has the problem and the exact nature of his difficulty. This statement implies that various examination procedures will be employed. Among those routinely used are speech tests, hearing tests, examination of the articulatory mechanism, intelligence tests, and case history interviews. Neither the classroom teacher nor a speech specialist will necessarily be personally equipped to give all these tests. Certain agencies may have to be called on for mental testing, hearing testing, and other kinds of specialized evaluations. It may seem desirable to refer the child for medical or dental examination if there are suspected organic complications.

OBJECTIVES OF EXAMINING PROCEDURES. The purpose of these testing procedures is at least threefold: (1) to obtain a careful description of the speech errors and to learn as much as possible about the factors which seem to be related to them as causes or maintaining conditions; (2) to obtain an estimate of the possible improvement that can be expected; and (3) to make possible an intelligent planning of remedial work.

The exact procedures employed will vary considerably with the

type and degree of difficulty. With many of the simple articulation problems in which the sounds affected are few in number and there is no reason to suspect anything beyond faulty learning as a cause, all that may be required is a speech test and a rapid inspection of the mouth to determine if there are any dental, palatal, or other oral deviations to be taken into account in planning remedial instruction. It is usually well, however, to obtain some kind of estimate as to whether the child's hearing falls within normal limits, although a formal audiometer test is not necessarily required. In more serious problems all the above examination procedures may be employed. Even then it may not be possible to put one's finger on the particular conditions which gave rise to the disorder. However, one should be able to get enough information to provide a basis for intelligent planning of a retraining program and to make some reasonable preliminary estimate of the probable improvement.

Speech test For most of the examining procedures no detailed description will be included in this section. This information is available in other sources for the reader who may be interested.[18] It is appropriate, however, to take time for some discussion of speech testing at this point.

The most usual procedures for examining an individual's articulation are as follows:

1. Eliciting and observing a carefully controlled sample of the person's spontaneous speech.
2. Noting carefully any articulation errors that occur and recording a description of them.
3. Checking the results of this procedure by observing less formal conversational speech.
4. Determining whether or not the person can imitate, as isolated sounds, those sounds on which he habitually makes errors in test words or running speech.

[18] A systematic and comprehensive presentation of testing procedures is to be found in Johnson, Darley, and Spriestersbach, *Diagnostic Methods in Speech Pathology, op. cit.*, which may be used to supplement what is said here and at other places throughout this book concerning testing techniques and evaluative methods used in speech correction.

MATERIAL FOR ARTICULATION TESTING. The controlled sample of speech required for articulation testing can be elicited in one of two ways. If the child can read with some skill, it is possible to use special test sentences, each of which is constructed to include several examples of one particular sound. For nonreaders, or individuals whose reading is so faulty as to make testing of this sort difficult, pictures can be used. The pictures are selected so that a response containing the sounds to be tested may be easily elicited.

Several textbooks contain lists of test sentences. Those given by Fairbanks are excellent.[19] He offers two complete lists, one to be used with older children and adults who have considerable reading skill and a second and easier list, from the standpoint of vocabulary, which is suitable for children with less reading skill. The usual procedure is to have the person being tested read through the sentences one at a time. The examiner notes each error carefully and records a description of it on a specially prepared form keyed to the test sentences. A form which has been found convenient is included in *Diagnostic Methods in Speech Pathology,* referred to in footnote 18.

A number of picture tests have been prepared in printed form. The one prepared by Templin and Darley is highly recommended.[20] Many speech clinicians, however, prefer to make up their own tests by cutting pictures from magazines, children's picture books, and similar materials, and mounting them on cards or in scrapbooks. Preferably such pictures should be colorful, and each one should contain a single dominant center of interest. Names of objects shown in the picture should, of course, be words within the vocabulary of young children. Instructions for making such a test are to be found in *Diagnostic Methods in Speech Pathology.*[21] Lists of words suitable for such picture testing are given also by Fairbanks[22] and Van Riper.[23] The usual

19 Grant Fairbanks, *Voice and Articulation Drillbook,* 2nd ed. (New York: Harper & Row, 1960), pp. xiii–xvii.

20 Mildred C. Templin and Darley, *The Templin-Darley Tests of Articulation* (Iowa City: University of Iowa Bureau of Educational Research and Service, 1960).

21 *Op. cit.*

22 *Op. cit.,* pp. xii–xvii.

23 Charles Van Riper, *Speech Correction,* 4th ed. (Englewood Cliffs, N.J.: Prentice-Hall, 1963), 482–484.

procedure is simply to make a game of having the child name the pictures or objects and actions shown in them. "Starter" questions may be helpful in getting the child to say the required words.

Usually, it has been considered better practice to obtain a sample of the child's spontaneous speech by one of the methods described than to ask the child to repeat words spoken by the examiner. The notion has been that in repeating words spoken by the examiner the child might imitate the examiner's speech to the extent that test words may not be articulated in the child's habitual way. As a result, errors that would ordinarily occur in his spontaneous speech, when his attention is directed less to how he is producing certain words or sounds and more to what he is saying, might be missed.

Two studies which have compared these two methods of eliciting samples of speech from children with articulatory problems have shown some disagreement in their conclusions. Templin compared results obtained by the two methods with preschool age children and concluded that there was little difference in the speech elicited when the child repeated words spoken by the examiner compared to speech elicited by using pictures.[24] On the other hand, Snow and Milisen found rather consistent indications that children in grades one and two and grades seven and eight do produce fewer articulatory errors when imitating the examiner's speech than when the speech is more spontaneous.[25] The difference may be that older children such as those tested by Snow and Milisen are more speech conscious than preschool children usually are. At any rate the present writers favor the picture type of testing because it may give a truer estimate of the child's articulatory patterns and because it usually will be more interesting to the child. Moreover, if well planned, it need be no more time consuming.

Whatever method of testing is used, it should be supplemented by observation of the child's connected, continuous speech. A

[24] Templin, "Spontaneous Versus Imitated Verbalization in Testing Articulation in Preschool Children," *Journal of Speech Disorders* (1947), *12*:293–300.
[25] Katherine Snow and Milisen, "The Influence of Oral Versus Pictorial Presentation upon Articulation Testing Results," monograph 4, *Journal of Speech and Hearing Disorders, op. cit.*, 30–36.

paragraph of material may be read, or the nonreader may be asked to tell a story about one of the pictures, or his speech may be observed in a brief conversation. Such observation enables the examiner to check on the results of the formal testing, to note whether errors not previously observed tend to occur in connected speech, and to see how consistent the errors tend to be. It also provides opportunity for estimating the over-all severity of the problem. Such notations as the following are useful in describing one's total impressions of the child's speech:

Over-all frequency of misarticulations:

Few errors
Errors rather numerous
Many errors

General consistency of misarticulations:

All error sounds misarticulated consistently
Occasional correct articulation of error sounds
Frequent correct articulations of error sounds
No consistent errors—general inaccuracy of articulation

Degree of interference with communication:

No interference
Slight interference—some listeners might react negatively, even though speech is easily understood
Moderate interference—most listeners would react negatively, though speech is usually intelligible
Extreme interference—speech very hard to understand, if not quite unintelligible

The last step in articulation testing has been called by Milisen the *Stimulability Test.*[26] Its purpose is to discover the extent to which a child is able to modify his misarticulations when he is strongly stimulated by the correct sound patterns spoken by the examiner. An example will illustrate this procedure. The examiner instructs the child being tested as follows:

I am going to make a certain sound several times. While I am saying the sound you are to listen very carefully and try to hear exactly how it

[26] Milisen, "A Rationale for Articulation Disorders," *op. cit.*

sounds. You are also to watch my face very carefully and try to see exactly how I make it. Do not say anything until I give you the signal. Just listen and watch carefully. After I have made the sound a number of times, I will nod to you, and you are then to try to say the sound in exactly the same way that I did. You are to try it just once.

The examiner then produces the sound being tested several times, for example: *sss, sss, sss, sss, sss.* The signal is then given for the child to attempt it and the examiner records the result of the child's attempt, that is, (1) whether a correct sound was produced, (2) whether there was any modification in the error that the child made in attempting to articulate the sound correctly, or (3) whether the error remained unmodified.

Several such trials should be given on each sound in isolation and the same procedure should be used to test the result of such stimulation with nonsense syllables and words. Every error sound should be tested in this way. Although this may seem like a rather time-consuming procedure, the information gained will be particularly useful in helping to plan the retraining program and in estimating probable progress. Hence, this part of the testing procedure should not be slighted.[27]

THE INTERPRETATION OF RESULTS OF ARTICULATION TESTING. Obviously, one purpose of an articulation test like that just described is to inventory the child's errors and arrive at a general estimate of the severity of the problem. If properly used, however, the testing procedure can also yield valuable information for planning retraining, and help in providing a basis for estimating probable progress. To begin with, one should discover whether the error is consistent or whether normal examples of the sound are sometimes produced. A number of studies have shown that particularly in young children the errors are frequently inconsistent. Moreover, the correct sound productions tend to occur somewhat systematically in particular positions of words and under particular phonetic conditions, for example, in particular sound combinations or blends.[28] Careful observation of such inconsistent errors may therefore yield information which

[27] An excellent explanation of this method and its usefulness in guiding retraining procedure is given by Milisen in the article referred to previously.

[28] Spriestersbach and James F. Curtis, "Misarticulation and Discrimination of Speech Sounds," *Quarterly Journal of Speech* (1951), 37:483–491.

will be useful in planning retraining procedures. Words in which the sound is usually correctly produced can be extremely helpful in showing the youngster that he really can produce the sound correctly. They also enable him to compare his correct and faulty ways of producing the sound. These words constitute a "nucleus of correct articulation" from which the correct production of the sound may be transferred to other words.

Another important item of information to be gained from the articulation test is an estimate of the relative ease or difficulty the pupil may experience in trying to correct his various errors. The data showing his consistency or inconsistency of errors are useful in making these estimates, since sounds which are correctly produced part of the time should be more easily corrected than those on which errors are always produced. However, the best indications concerning whether the correction of a sound is likely to prove easy or difficult come from the last step in the articulation testing procedure, testing the child's ability to modify his errors when strongly stimulated by the correct patterns. Sounds which can be rather easily imitated should be comparatively easy to master. Sounds for which at least a fair approximation can be produced will probably be less difficult than those which the child is unable to imitate even approximately.

This information on the relative ease or difficulty to be expected in correcting particular sounds is quite important in planning a corrective program. One of the first decisions to be made in such planning concerns the order in which the various misarticulated sounds are to be worked on. There is very good reason for starting with the easier sounds and progressively working toward those that are most difficult. By so doing the child receives maximum reward and reinforcement from his early efforts and is encouraged to greater efforts as the work progresses. Moreover, to the degree that this order speeds up improvement during the early work the handicapping effects of the speech difficulty are more rapidly minimized.

Another important decision that must be made in planning the retraining program concerns the stage at which the work must be begun for each sound. This will be made clear in the next few pages in which the various stages in the retraining procedure are

discussed, but it may be pointed out here that for those sounds which can be imitated successfully under strong stimulation certain early stages of retraining can be considerably shortened, if not eliminated.

In addition, information gained from the articulation test is of prime importance in estimating the rate of probable improvement. Lastly, information of this kind may be useful in evaluating the effect of possible causal factors, such as dental and other oral malformations. If the child sometimes produces a particular sound correctly, or if he can imitate the teacher's correct articulation of it, the organic factor can scarcely be important in preventing correct articulation of that particular sound at least.

Retraining procedures for articulatory disorders Obviously procedures will vary somewhat from child to child and from sound to sound. For example, if a child is already able to produce a sound correctly, in certain words or under certain phonetic conditions, the situation is not the same as it is if the error is consistent. Also, clinicians differ somewhat in the exact procedures they employ, in much the same way that two teachers of reading may be found to proceed somewhat differently. In general, however, the following outline tends to be followed more or less closely by almost all speech clinicians, largely because it results in a set of graded experiences ranging from relatively simple to relatively complex:

1. Eliminate or minimize the effect of factors causing the misarticulation.
2. Create vivid auditory impressions which will enable the child to recognize readily both the error and the correct sound, and to discriminate between the two whenever he hears them.
3. Teach correct production of the sound in isolation.
4. Strengthen the correct production of the sound so that it can be produced easily and at will.
5. Secure transfer of the correct sound into connected speech in a small nucleus of commonly used words.
6. Make the production of the correct sound, instead of the error, habitual in all connected speech.

It will be recognized that this is an outline of subgoals to be accomplished rather than of specific procedures for accomplishing them. Various procedures are employed, some of which will be described in the following paragraphs. Even the goals that need to be accomplished will vary somewhat from one case to another. For example, the child who is keenly aware of his error may recognize it readily whenever it occurs. He may also have a distinct auditory impression of the correct sound and be able to discriminate the correct and incorrect sounds without difficulty. But he may still not be able to make the sound correctly. Provided there is no correctable causal factor still operating, the work with him may begin with Point 3 of the outline.

ELIMINATING CAUSAL FACTORS. Organic factors which contribute to impaired articulation are, fortunately, often remediable. Crooked and spaced teeth can usually be straightened; jaws can sometimes be brought into proper alignment to correct a markedly bad dental occlusion; tongue-tie can be relieved; and misshapen palates can, to some extent, be repaired. Unfortunately, such dental and surgical reconstruction of faulty articulatory structures usually is expensive, and surgeons and dentists trained in such work are not available in all localities. If possible, however, the speech clinician will seek appropriate professional advice concerning the feasibility of remedying such obstacles to good articulation and, if such work is indicated, will recommend that it be done before speech retraining begins. It should be understood that the corrective measures of straightening teeth and realigning jaws do not of themselves guarantee good speech. Error habits may still persist, and the speech clinician will usually have an important job to do when the dentist or surgeon has completed his work.

Even when it proves impossible to correct the structural defects which have contributed to the problem, the situation is not hopeless. It has already been stated that such conditions are usually contributory causes, rather than disabling factors. Many individuals have attained excellent speech in spite of marked, and even severe, abnormalities of the articulatory structures—sometimes with no special speech training. The skilled speech clinician has learned to make an appraisal of the compensatory move-

ments required to produce particular sounds and to plan a program of retraining which will minimize the effects of structural irregularities. Any detailed consideration of such procedures is, however, beyond the scope of this book.

ENVIRONMENTAL FACTORS. Environmental factors which may contribute to the speech problem are perhaps more difficult to deal with than are the more tangible organic factors. Long-standing behavior patterns of parents and others with whom the child is in daily contact are less easily changed than crooked teeth. We have seen that these factors are certainly important in some cases and that steps to alter unfavorable influences of this sort may contribute materially to improvement in speech.

TALKING TO PARENTS. Although the counseling of parents is sometimes difficult, takes considerable time, and may in some cases be done better by a psychiatrist or psychologist than by a speech correction teacher, much can be done which will be helpful in most instances. Some parents may resent what they regard as undue interference, but they are relatively few. Parents are usually well-intentioned persons who have a great deal of love and affection for their children. The difficulty is that sometimes they do not understand the problems their children face. Their well-intentioned efforts to help are sometimes misdirected. Moreover, parents are often extremely busy people—their time is usually filled with a host of adult activities that keep them on the go from morning till night. Absorbed in their own interests, they are sometimes neglectful or impatient of their children without the slightest intention of being so—indeed, without knowing that they are. The conscientious speech clinician will, therefore, make a point of seeing the parents of the children with whom she works. If she is skillful she may help them to a much better understanding of the problem, how it came about, and the kind of conditions at home which will be the most conducive to improvement. Both clinical experience and research studies have demonstrated the importance of enlisting the active cooperation of parents. One such study demonstrated that more rapid improvement in articulation skills was obtained with children whose parents attended lectures and observed their remedial speech

work than with children whose parents did not.[29] Learning to produce correct sounds in the special environment of a clinic or special class is one stage of the corrective process, but the process is not complete until the correct habit is firmly established during everyday speech. Home cooperation is particularly helpful in this latter all-important stage of the corrective process.

EAR TRAINING. In Chapter Two it was suggested that the speech mechanism is an instrument which we learn to "play by ear." If one were to try to pick out a tune on the piano by ear and had no clear impression of how it should sound, it would be strange indeed if the result obtained turned out to be faultless. Yet that is almost exactly the situation of many persons with articulatory problems. They have not developed clear auditory impressions of what the correct sounds should be or how they differ from their errors. The little youngster who says, *"One, two, free, . . ."* is often quite oblivious of the fact that he has made an error. He has no clear auditory impressions of *f* and *th* as distinct and separate sounds. That this is true is further demonstrated when he tells about the *"thish"* he had for lunch. As a matter of fact, these sounds, along with a number of pairs of other sounds, such as *s* and *th*, *s* and *f*, *sh* and *ch*, *t* and *k*, and *d* and *g*, are highly similar in their sound characteristics, so similar that even adults may confuse them when listening under noisy conditions or when their attention is distracted. It is hardly surprising, therefore, that the similarities between such sounds seem so striking to the untrained ear of a young child as to obscure the rather slight differences.

Essentially the same sort of failure to make fine auditory discriminations may underlie many of the youngster's distortions and omissions of sound. The distortions sound correct to his ears. The omissions occur most frequently in positions where the omitted sounds tend to be obscure anyhow and to the child's ear it is possible that no distinctive characteristic of the word has been lost.

This means that with a large number of cases—some authorities

[29] Sommers, *et al.*, "Training Parents of Children with Functional Misarticulation," *Journal of Speech and Hearing Research* (1959), 2:258–265.

go so far as to say all—teaching the child to produce the correct sound must be preceded by some systematic ear training. Before attempting to play, one must get the tune "inside one's head."

The problem is further complicated by the fact that very few people except speech clinicians, phoneticians, and teachers of phonics ever pay much attention to speech sounds as such. We don't listen to a series of connected sounds; we listen to words, or phrases, or sentences. For most of us, adults as well as children, the speech sound is not an entity, a meaningful unit of any sort, and we don't hear it as an entity. Nor do we very often learn it as an entity. What we hear, and what we learn, are words, and the individual speech sounds which make up those words are for the most part undifferentiated pieces of a larger complex auditory pattern.

Hence, the child not only needs to learn to make auditory discriminations which he may never have made before, but he needs to learn to break down these word patterns, at least to the extent of being able to recognize, out of the word pattern, those sounds on which he tends to make errors. Eventually he needs to eliminate the error part of his word habit so that a correctly formed sound may be substituted in its place. The speech clinician, therefore, spends some time in ear training as one important part of the corrective procedure. The exact amount of time to be spent in such ear training work will vary, of course, for different individuals. The child must attain certain minimum goals before he is prepared to attempt to produce correct sounds.

1. *He should learn to break down the word patterns containing his error, in at least a number of commonly used words, so that the error is recognized and isolated as a distinctive sound unit in those words.* Among the procedures used for this purpose are the following:
 a. Lists of words are read by the teacher. Some contain the difficult sounds and some do not. The child signals each time he hears a word containing the sound. Score may be kept by counting one for each correct recognition of a word containing the sound and subtracting one for each miss. Progress can thus be charted.
 b. A scrapbook can be made of pictures of objects whose names

contain the sound. The name, with the difficult sound underlined or printed in red, is written below each picture.

c. A hide-and-seek game may be played in which pictures or objects whose names contain the difficult sound are hidden in the room along with other pictures and objects whose names do not contain the sound. The child is to find as many as he can and place them in separate piles. He is given points for each one found and placed in the proper pile, and points are subtracted for each one placed in the wrong pile.

d. Older children and adults may be assigned to underline all words in a paragraph which contain the difficult sound, to mark all such words in a list, and so forth.

2. *He should learn to recognize and identify the error sound and the correct sound as separate entities and be able to discriminate between them easily.* Following are examples of the kinds of procedures used to accomplish this:

a. Both the error sound and the correct sound may be given names. For the child the sound can be associated with animals or objects that make noises, so that *z* may become the buzzing bee sound, *s* may be the punctured tire sound, *r* may be the car starting sound (made by the grinding noise of the starter), *ch* may be the train sound, *f* may be the angry cat sound, and so on. The main importance of these names is in reinforcing the auditory image of each sound and making it as vivid as possible. Even with older children and adults, names for the sounds seem to facilitate the learning process, so that the *s* lisper may have his error named as the *whistling s* or the *hishing s,* whereas the correct sound is called a *sharp clear s.*

b. If the error is one that the clinician can simulate (and the skilled clinician will develop a considerable facility at this), practice can be given in discriminating between the error and correct production of the sound. The teacher reads lists of words in some of which the error is simulated or reads a story in which the error is produced part of the time. The child is required to listen carefully for each sound error and signal each time one is heard.

c. If recording equipment is available, the student and the special speech teacher can record lists of words together, the student reading the word and making his error, and the teacher repeating the same word with the sound made correctly. On playback the student listens carefully and compares the sound of his word with that of the teacher. Older children and adults may be required to write reports of such listening experiences, in which they describe as exactly as possible the characteristics of the two sounds as they heard them and the differences which they were able to hear.
d. Sometimes a child will detect an error in the speech of another child but fail to hear the same error in his own speech. Recordings can prove very helpful in a case of this kind. Both children who make the error can be recorded, together with the teacher or some other person who produces the sound correctly. When listening to the record the child can hear that he really does make the same error he had noticed in the other child, and how different the speech of both of them sounds from the error-free speech of the third person.

The above are only a few suggestions to illustrate procedures used in ear training. Throughout, the child is constantly stimulated with the correct example of the sound. He hears it and hears it many times. He is learning the tune that he is about to be asked to attempt to play, so to speak. The goal is for him to learn it so well that there will no longer be uncertainty or confusion as to the result he is trying to produce. This goal may not be completely realized at this stage. Ear training does not terminate with the beginning of the next step. In fact it will permeate the whole retraining process from beginning to end. But a long stride should have been taken before actual correct sound production is attempted.

TEACHING A NEW SOUND. Before the correct sound can be produced in rapid connected speech and the old error eradicated, the sound must be thoroughly mastered as an isolated element separate and apart from the complex pattern of words. If the child can demonstrate this mastery, then, as we have said, this stage in the retraining process can be correspondingly shortened

or eliminated. Otherwise, it will need to be duly emphasized.

At first glance this procedure of teaching a new sound in isolation may seem to be in contradiction to what we have previously said, since it has been pointed out that speech is not ordinarily learned by sound elements, but rather that we learn word patterns as wholes, without conscious attention to the sound elements from which they are compounded. Nevertheless, the best opinion is that in correcting speech *errors,* the sound must first be taught in isolation, as an entity. Not until the pupil has thoroughly mastered it as a separate sound, so that he can produce it easily and at will, will he be ready to incorporate it into words and connected discourse. So long as a great deal of effort and attention are required to insure the correct production of the sound, it cannot be incorporated in the rapid flow of continuous speech.

An even more compelling reason why sounds need first to be thoroughly learned out of the context of familiar words stems directly from the fact that learning to talk is a matter of learning word habits. Since that is true, we can expect those word habits which have been in the speech repertory of the person for any considerable length of time to be firmly established. Such word patterns are not only unitary auditory wholes; they are, also, strongly established patterns of movement. We cannot expect success in breaking down such strongly entrenched patterns, so that we may extract from the total pattern one of its lesser elements and replace it with a new one, unless the new element is itself thoroughly learned. Even with errors which are produced inconsistently, so that the correct sound is really a part of the individual's speech repertory, some practice on the sound in isolation and in simple syllable combinations may be needed before it can be transferred to words for which a strongly entrenched error habit-pattern already exists. In this case, however, the time spent in such practice will as a rule be greatly shortened.

There are a number of different methods for teaching a new sound, of which only a few will be presented. The ones described are the most basic and the most commonly used.

The stimulus method. The most basic tool in the speech

clinician's kit is the so-called "stimulus method." It is the one method which is always employed. Although the stimulus method has long been used by speech clinicians, only recently has there been any substantial research to evaluate its effectiveness. Milisen and certain of his students have reported a number of experiments in which they tested the general effectiveness of the basic stimulus method as well as certain variations of it.[80] On the whole their results support the clinical consensus that new speech habits can be effectively taught by the procedures employed in this method. In addition, these studies have demonstrated that while either auditory stimulation or visual stimulation is effective in some degree, neither is as effective as combined auditory-visual stimulation or, as Milisen prefers to call it, integral stimulation. In the following presentation the stimulus method which will be discussed makes use of this combined auditory-visual stimulation. As a matter of fact, the main essentials of this method have already been described, as the last step in the articulation testing process, where the examiner tests the child's ability to imitate a correct sound when given a strong auditory and visual pattern to follow. The procedure used in training is somewhat as follows:

All right, Frank, we're going to give you a chance to try to make the new sound. First, I will say it several times and you must watch me very closely and listen as carefully as you can. When I nod my head, you try it once. Remember, you aren't going to make the old "slurpy *s*" this time. You are going to try to get a sharp, clear *s*. All right, here we go: *sss, sss, sss, sss, sss.*

The clinician nods and the pupil makes an attempt to produce the sound.

In many cases, if the ear training has been adequate, the pupil

[80] Davis A. Scott and Milisen, "The Effect of Visual, Auditory and Combined Visual-Auditory Stimulation upon the Speech Responses of Defective Speaking Children," *Journal of Speech and Hearing Disorders*, monograph 4, *op. cit.*, 38–43; Scott and Milisen, "The Effectiveness of Visual-Auditory Stimulation in Improving Articulation," *loc. cit.*, 52–56; William R. Humphrey and Milisen, "A Study of the Ability to Reproduce Unfamiliar Sounds Which Have Been Presented Orally," *loc. cit.*, 58–69; Edward F. Romans and Milisen, "Effect of Latency between Stimulation and Response on Reproduction of Sounds," *loc. cit.*, 72–78; Donald B. Rice and Milisen, "The Influence of Increased Stimulation upon the Production of Unfamiliar Sounds as a Function of Time," *loc. cit.*, 80–86.

will need only a few trials to produce a good example of the sound, particularly if there is no complicating organic factor. At appropriate points a comment by the clinician should be interposed between trials to indicate the degree of success in attaining the desired response. He should keep the pupil encouraged but should not reward, by calling it a success, a sound which is only a fair approximation to the one desired. Such a comment would only confuse the pupil and make him uncertain as to exactly what he is supposed to do. If the ear training has been well done, he will be pretty sure without being told when he has produced a good example.

Throughout this work with the stimulus method the pupil should be watched to see that he does not become unduly tense, as he may if he thinks that the correct sound will come if only enough muscular effort is used. He should be encouraged to vary slightly his tongue positions and articulatory movements in an effort to find the correct method of producing the sound, but all attempts should be kept easy and relaxed. At all times attention should be focused both on the auditory result and on the visual cues which can be seen by closely watching the clinician's face. If, following a number of trials, the child does not succeed in making a good sound, or at least a close approximation to one, the attempt should be dropped for the moment, and clinician and pupil should go back and review the ear training work before trying again.

The stimulus method has a number of distinct advantages. First, it is the simplest and easiest to use. Second, it is the most direct of all the methods. That is, it is a direct attempt at *playing by ear*. The pupil is trying to produce a particular auditory result without the mediation of some other kinds of cues, such as thinking about what he is doing with his tongue. As a result of this direct auditory approach, the result obtained through the stimulus method is usually more stable right from the start than sounds taught by other procedures. Third, no distracting stimuli or irrelevant cues are introduced.

The speech clinician should become highly skilled with the stimulus method for another reason. This is that auditory stimulation, like ear training, permeates all speech correction. What-

ever else the clinician does in an attempt to change the patterns of the child's speech, he continues to bombard his ear with the correct sound. This is of the most fundamental importance because, whatever method may be used to teach the new sound in the beginning, the pupil must, sooner or later, arrive at the stage where he can depend on his ear to tell him whether or not the result has been adequate. Hence, the stimulus method is not only the most basic tool in the speech clinician's kit but also the only one which is used with every case and which is used in one way or another throughout the whole process.

Phonetic placement. As here used, the term "phonetic placement" covers all procedures by which the clinician directs the attention of the child toward what he is doing with his tongue, lips, jaws, and other parts of his speech mechanism. There are many such procedures, but they vary mainly in detail. Underlying all of them is the basic principle of having the pupil attend to, and consciously attempt to control, the movements and positioning of the articulatory structures. A number of typical phonetic placement procedures are as follows:

1. Both the pupil and the clinician watch a mirror as they work on the sound. The pupil carefully observes what the clinician does in producing the correct sound and then tries to imitate him.

2. Diagrams or pictures showing tongue, lip, and jaw placement for various sounds may be used to show the child what to do. For young children a drawing of a child with his upper teeth on his lower lip may be called the *f* sound picture or the *v* sound picture. Another picture showing just a little of the tongue between the slightly parted front teeth can be called the *th* picture. Names can be given to the persons in the picture also, in which the sound is employed; for example, the boy in the *f* picture can be named *Freddy,* while the one in the *th* picture may be *Theodore.*

3. For older children and adults, models as well as diagrams may be employed to show them where to place the tongue.

4. The simplest and most common phonetic placement procedure is a simple verbal instruction as to what to do with the tongue; the pupil attempts to follow this instruction while he

feels, through tactile and kinesthetic cues, what is happening.

5. A special type of phonetic placement technique is that of having the pupil modify slightly the tongue position for sounds that he can already produce. It has been found that some sounds may be more easily produced in certain consonant blends than by themselves. For example, the blends *dr* and *tr* have been found to be produced correctly more often in the speech of young children than is the *r* when it occurs as a single consonant.[31] This suggests that one method of teaching *r* is to have the pupil place his tongue as for *d* and then retract it slightly at the same time dropping the tip. He will, of course, be given auditory stimulation simultaneously. Once he has mastered the *dr,* other blends, such as *tr, thr, kr,* and *gr,* may be tried, and finally the sound by itself after the tongue position has been thoroughly learned in these blends. This is a reversal of the usual procedure of teaching the sound in isolation before attempting it in blends, but it has good research evidence to support it.

Phonetic placement procedures have the disadvantage that they are less direct than the stimulus method; they focus attention on placement and movement, features of the sound in addition to the auditory pattern, whereas the latter is a major part of the end result being sought. As a consequence, sounds taught through phonetic placement methods probably tend to be less stable at first than those obtained through the stimulus method alone, and they need to be strengthened and reinforced immediately. However, phonetic placement procedures are essential to the clinician. By using the techniques properly it will sometimes be possible to teach a new sound rather easily by phonetic placement, while it would be difficult to do if only auditory stimulation were employed. This is particularly true for the occasional speech handicapped child who seems to have only a few stereotyped tongue movements with which he tries to produce all sounds. With such a case it is usually necessary to give some actual direction with respect to tongue placement as well as some exercises designed to help him learn to make the desired movements easily.

31 McKenzie William Buck, *A Study of the Misarticulation of* [r] *in Children from Kindergarten Through Third Grade,* M.A. thesis (University of Iowa, 1948). The findings of this study are summarized and discussed within a comprehensive context of related data and theoretical considerations in Spriestersbach and Curtis, *op. cit.*

Another situation in which phonetic placement procedures are often required is that in which the child cannot produce sounds in the normal fashion because of complicating structural deformities, such as malocclusion. Here compensatory movements may need to be taught; that is, the child may need to learn a method of sound production which compensates for his organic handicap so that a good sound is produced in spite of it. Such compensatory movements are usually most efficiently taught if the clinician analyzes carefully the possible ways in which the faulty mechanism can be used to produce the desired auditory result, and then directs the efforts of the pupil accordingly.

Other methods of teaching a new sound are sometimes used in special cases. However, the above two, stimulus method and phonetic placement, are sufficient for our present purposes, since they are certainly the ones which the public school speech clinician will employ with almost all cases.

REINFORCING THE NEW SOUND. In the previous section it was explained that sounds need to be taught as sounds, in isolation, rather than in words. The reason for this is that the child will usually have strongly established word habits, and the error has long been an automatic part of these movement patterns. Such an automatic response cannot be replaced by a new one which is not thoroughly learned.

Not infrequently, it is at this point that the parent or teacher who has not had special training becomes too impatient and spoils things because of failure to realize the need to "make haste slowly." Unless gifted with unusual insight into the process that is taking place, the untrained mother or teacher is likely to feel that 8-year-old Eddie, who has just said *r-r-r* so clearly, ought now to be able to say "rabbit." She therefore feels discouraged when she asks him to try, and he obligingly responds with "wabbit."

The fact is, of course, that the new response has not been thoroughly enough established as yet to be able to compete on anything like even terms with the thoroughly overlearned *w* movement in the whole habit pattern, *wabbit*.

Practice on isolated sounds. Most trained clinicians, therefore, give every child a substantial amount of practice in producing each new sound in isolation and in nonsense syllables before any attempt is made to put it into words—unless, of course, the

child is definitely able to do these things sufficiently well. The youngster is asked to produce the sound many times by itself until he can do it easily and consistently, without a great amount of consciously directed effort. He may be asked to vary the loudness with which he makes the new sound so that he learns to produce it correctly throughout the whole range from very soft to very loud. He will be asked to attend carefully to the feel of the sound. Thus, he uses tactile and kinesthetic sensations of touch and movement as well as auditory cues in forming a clear awareness of the sound. Practice should be strongly motivated. Older children and adults are motivated at least in part by understanding the reason for the practice, but usually learning will be speeded up by some method of charting progress which will act as an additional reward. With small children numerous games can be invented to keep the drill from becoming irksome and to provide motivation. One which is in almost every clinician's bag of tricks, and which never seems to fail to challenge a small child, is the "ladder game."

A *speech ladder* is cut from cardboard or drawn on a large sheet of paper. The child climbs and descends the ladder by correctly saying the sound on which he is practicing. As the child speaks the sounds the clinician points with a pencil to the appropriate rung on the ladder—or the youngster is allowed to move a button or other object up the ladder—moving up one rung for each successful production of the sound and back one rung for each error. The object is to reach the top of the ladder, and progress can be charted according to the number of times the ladder is climbed without having to drop back a single step. This game can be used with isolated sounds or nonsense syllables or words.

Use of nonsense material. Nonsense syllables make excellent practice material at this stage for two principal reasons: (1) They provide practice material in which the newly learned sound can be combined with other sounds in a rapid sequence of movements as in ordinary meaningful speech. (2) They do not, however, involve many of the difficulties of words, since they can be kept as simple as may be necessary and *since they are not highly practiced habit patterns in which the new sound will have to compete with a strongly habituated error.* Nonsense syllables can

be built up by combining the newly learned sound (ordinarily a consonant) with any of the common vowels and diphthongs.

The way in which this practice proceeds can be illustrated by nonsense syllables formed with the consonant *s* and the vowel *o*. In this illustration a repeated symbol indicates that the sound is prolonged. Dashes indicate very brief pauses.

1. Consonant in the initial position (preceding the vowel): *ssss–oooo; s–s–s–o; s–o; sssooo; so.*
2. Consonant in the final position (following the vowel): *oooo–ssss; o–s–s; o–s; ooosss; os.*
3. Consonant in the medial position: *ooo–sss–ooo; o–s–s–s–o; o–s–o; ooosssooo; oso.*

It may be seen that the syllables are built up gradually. The sounds are first repeated or prolonged as separate units before the child is asked to blend them together. The last production of each should be spoken rapidly with no more duration for each sound than it would have in normal running speech.

Like the isolated sound practice, this nonsense syllable practice needs to be strongly motivated. The same types of games and other motivational devices can be used for both.

Negative practice. · Once the sound is well mastered so that it can be produced with reasonably good consistency in isolation and in nonsense syllables, a type of drill sometimes called *negative practice* can be very valuable. Negative practice consists in producing the *error* itself, but in such a way that the error habit is weakened, not strengthened, by the process.

This weakening will occur if the error is penalized rather than rewarded each time it is spoken. The error will be penalized if the child produces it with full knowledge that the sound he is making is the one that he is to avoid in his ordinary speech. Various devices can be used to reinforce the knowledge that this is the sound to be rejected. The error can be represented in written spelling, or some other symbol, and crossed out with a pencil each time it is produced. A "thumbs down, thumbs up" game can be played in which the pupil and clinician turn thumbs down each time the error is produced and thumbs up for each production of the correct sound.

Negative practice is usually best used in a drill procedure in

which the pupil alternates the production of the correct sound and the error sound. Such voluntary, intentional alternating of the two sounds not only reinforces the auditory discrimination between the two but also provides an opportunity to learn the differences in how they *feel*. The clinician can focus the pupil's attention on these differences by asking him to describe in his own words the ways in which the two sounds feel different. For sounds like the *th* and *f*, which are easily visible, mirror work may be used to provide visual cues.

As was stated in beginning the discussion of negative practice, its use requires full knowledge on the part of the pupil concerning what he is doing and why he is doing it. The error sound must be produced voluntarily and intentionally, and with the attitude that it is an error which is not to be made in ordinary talking. Practice of the error without such thorough knowledge and understanding of the process is not *negative practice*. Obviously, therefore, the practice must be preceded by a very careful explanation by the clinician of the reasons for using this type drill. If it is unlikely that the pupil will be able to grasp the purpose and need of the drill, it is probably best not to use it. This will sometimes be true for younger children. If it is used correctly, however, with complete understanding by clinician and pupil, it is a powerful tool both to strengthen the correct sound and to weaken the error.

Putting the new sound into words. If the preceding goals have been adequately accomplished, no real difficulty should be experienced in putting the new sound into words. If failures in attempting words are at all numerous, it means that more work must be done to (1) reinforce and strengthen the correct sound habit, (2) weaken the error habit, (3) establish the essential auditory discrimination, and (4) increase skill with articulatory movement pattern (nonsense syllables) containing the correct sound. If this should happen, therefore, the speech clinician will go back to these earlier stages of the work and provide additional training. As a matter of fact, the skilled speech clinician will probably not have stopped the training begun in these earlier meetings with the pupil. Each speech correction period will usually begin with a brief review of the earlier work and further reinforcement of the good habits previously acquired.

Transfer of the new sound to words can be accomplished by the use of word lists or, for the nonreading child, series of pictures whose names contain the sound. The attempt on each word should be preceded by strong stimulation by the clinician. That is, before the pupil tries the word, the clinician will repeat it several times using the correct sound while the pupil watches and listens carefully. And this stimulation should be repeated each time the word is attempted, until the new word pattern has become fairly easy for the child to produce. Failures should be pointed out to the child and successes should be rewarded. Usually following a failure it is well to practice the sound a few times in isolation, or in nonsense syllables, before the word is attempted again.

Practice on words should begin with a few familiar words which the child will have occasion to use over and over again in his daily communication. Tongue twisters may be all right in parlor games but they have no place in speech correction—they usually involve too many productions of a sound, in insufficiently varied phonetic contexts, in rapid succession. Moreover, as word practice goes on, new words may be added to the practice lists, but common sense dictates that they should be words included in the pupil's ordinary speaking vocabulary and that unusual words which he will rarely use make poor practice material.

It should be emphasized that the goal of word practice is easy, effortless production of the sound in each word. Ordinary speech is a rapid, fleeting thing. In normal speech there is no slow, labored sound production. Hence, the goal of word practice has not been reached until the sound has been made a part of the same effortless, rapid sequence of movements that characterizes the word in normal patterns of connected speech.

Transfer to a few commonly used words in connected speech. When a few commonly used words have been mastered so that the correct sound can be produced in them easily and without hesitation, the transfer to connected speech may be begun. The importance of this stage of the retraining process cannot be overstressed. All too often the pupil comes to regard speech work as something he does only in special speech periods and in a few outside assignments. The goal of this step is to begin to bridge the gap between the speech that the pupil can and does produce

in his speech correction lessons and the speech that he uses in his everyday talking.

Various kinds of assignments can be used to assist in this process. Some of these will be described. Certain basic ideas should be kept constantly in mind, however, no matter what specific assignments may be given.

1. No one, adult or child, can be expected to maintain a constant police watch on his speech throughout all the varied activities of his day. Hence, the assignments used to incorporate new habits in connected speech should be made for specific periods of time and for particular situations.

2. No child can make the transfer to all words in his speech at once. Hence, the emphasis should be on transfer to a few commonly used words. Later, after these limited objectives are accomplished, there will be time enough to eradicate the error whenever and wherever it occurs and replace it with the good habit.

3. Here, almost more than in any other step of the procedure, the emphasis on thorough ear training should pay dividends. If adequate ear training has been distributed throughout the previous work, the pupil should experience little difficulty in distinguishing between his error sound and a correct production of the sound, even during the rapid flow of connected speech. If he cannot do this, the ear training has been incomplete. If he is to go on to the next step, that of stamping out all occurrences of the error and replacing them with correct sounds, he must be able to detect all occurrences of the error. Hence, ear training does not terminate at this point but is an important part of the entire transfer process.

4. This stage of the speech correction process is where parents and other teachers can begin to be of most direct assistance. The speech clinician will ordinarily enlist their cooperation in helping the pupil to carry out assignments and in making reports concerning his success in completing assignments.

Use of nucleus situations. The use of nucleus situations has been suggested by Van Riper.[32] As was pointed out, no one can be expected to keep a constant watch on his own speech, nor does he like to have some other person nag at him constantly

[32] *Op. cit.*

about his errors. The writers know of one child whose mother interrupted his speech at any and all times to remonstrate concerning an error and to drill him then and there on the correct sound. The boy had become so apprehensive about talking that he had begun to develop some of the straining and forcing characteristics that are associated with stuttering. It is much wiser, at first, to attempt to transfer the new, correct habit into casual speech only in a few situations.

Anyone with a bit of ingenuity can think of a number of situations which can be used for this purpose. For a younger child they can usually be ones in which another person can check on his success in carrying out the particular assignment of the moment and report back to the speech clinician. A few examples of such situations and assignments follow.

1. With a child who has the daily task of helping mother with washing the dishes or getting the family meals, these opportunities for conversation can be used as *good speech* situations, provided the parent is one who can develop the necessary feeling of relationship with the youngster and understands clearly the objectives and the method. Topics of conversation can be planned by the clinician and pupil, and words or phrases likely to occur can be used as practice material. It will usually be better, also, if some specific assignment is planned. For example, the clinician and the pupil can plan for him to tell about some interesting happening at school, the telling of which will require the use of two or three words on which they have been practicing. (Or some of the phrases or sentences he will need to use can be made practice material for the day's speech lesson.) A note to the mother may ask her to listen to check on the success the child has in using the particular words on which he is working, and to send back a report.

2. Many families have an evening story hour. Even where that has not been a custom of long standing, parents will probably be willing to start it if they can be shown that it will help their child's speech. The situation will provide many opportunities for speech practice. Stories can be prepared by the child either to be read or told. The clinician can help select stories which will provide practice on words and sounds being taught, and can provide practice in the speech period to prepare for the correct

use of these sounds when the time to read or tell stories actually comes.

3. For the child who often goes shopping with his mother, another *good speech* situation can be provided if the mother can be persuaded to allow him to ask questions of the clerk, to talk about prices and the like, while she stands by and checks on the use of sounds in words he has practiced. The various items on the shopping list will provide practice for almost any sound the child may be learning. As before, these words and phrases should usually be practiced in the speech lesson before an assignment is given involving an actual situation.

4. The schoolroom, as has been suggested, should provide even more and better nucleus speech situations than does the home. How effectively they are utilized will be quite as much up to the classroom teacher as it will be up to the speech clinician. For example, the classroom teacher can let the speech clinician know when oral reports are to be given. If he has this information in advance, the speech correction teacher can then show the pupil how to use this oral report as a chance to transfer new sound habits to connected speech.

5. If the classroom teacher can inform the speech clinician when a class discussion is to be held on a particular topic, the speech clinician may be able to utilize the information by having speech handicapped pupils from this class use as practice materials words, phrases, and sentences which are likely to occur in such a discussion.

6. The classroom teacher will usually be kept informed by the speech clinician concerning sounds and words on which pupils from her class may be working. Many opportunities for practice on these sounds and words (other than those suggested above) will occur in real speaking situations. It should be remembered, however, that correction of errors should be confined to specific situations in which the pupil knows he is going to be checked. Also, the correction should generally be limited to particular words in which he is learning to establish the new habit.

Nucleus words and phrases. It has been pointed out that the goals at this stage of the work should be kept limited so the pupil may reasonably be expected to achieve them. This applies to words as well as situations, as should be clear from some of the

specific suggestions for assignments. It is a good rule to try first to secure transfer of the new sound habit to those words and phrases which the child needs to use most often. Not too many should be attempted at one time. Experience has shown that if the correct sound can be firmly established in a relatively few commonly used words, and be rewarded so that satisfaction is derived from this limited success, the good habit not only will usually spread to other words in which the error had formerly occurred but also will generally be used in new words as they are learned.

Previous discussion has already indicated some of the ways in which nucleus words may be chosen. Other words and phrases which may be utilized are:

1. Greetings: hello, good morning, good afternoon, how do you do, etc.
2. Phrases used upon leave-taking: good-by, I had a very nice time, etc.
3. Words and phrases used as courtesies: thank you, if you please, you're welcome, yes, please, etc.
4. Names of friends and associates containing the difficult sound.
5. Frequent requests that the child is called on to make (he will have to ask permission for many things every day).

Many of the things just suggested are stereotyped phrases used over and over again by everyone, day in and day out. Hence, they make excellent material with which to begin the transition of a new sound into casual everyday speech.

Completing eradication of the error. As has been indicated above, the biggest job in securing transfer of a new sound habit into ordinary speech is to provide situations and practice which will insure its consistent use in a few commonly used words and in a few nucleus situations. If the correct habit, thus employed, is regularly rewarded, it will tend to spread to other words and other situations. With young children often this is all that is required. With older children, whose error habits are usually more strongly entrenched, some assistance to this process is usually given with assignments of the type suggested in the following paragraphs.

Continued ear training. It has already been suggested that ear training becomes most important when the pupil must be relied

on to maintain a check on his own errors in rapid connected speech. Some ear training techniques are particularly adapted to these connected speech situations:

1. The clinician or the pupil can read aloud a paragraph and the pupil can check or underline every word in which the difficult sound occurs.

2. The clinician can read paragraph material and occasionally imitate the error. The pupil is to check every occurrence of the error.

3. The pupil may be assigned to observe the speech of another person which contains a similar error and record all the errors he hears during a particular time.

4. If a tape recorder is available, recordings can be made during which the pupil is to stop each time he realizes he has made an error, say the word correctly three times, and then go on. On listening to the playback of the recording he can check on whether any errors occurred that he was not aware of when he was talking.

5. If no recording equipment is available, similar practice can be given if the clinician makes a note of all errors that the pupil failed to catch and calls his attention to them at the end. Part of the value of the practice is lost, however, if the pupil cannot hear his own errors—as on playback of a recording.

Penalizing the error. The error will tend to be eradicated more rapidly if it is penalized rather frequently. What is meant here is not that someone should act as a constant proctor of the child's speech and pull him up short each time an error occurs. As has been emphasized, such nagging is to be avoided. Limited doses of checking by parents or teachers may be necessary, but it should be done, if at all, in a genuinely friendly manner. The goal is for the pupil to learn to recognize his own errors and provide the penalties himself. The penalty can be almost any device which will tend to make the occurrence of the error more vivid. Its main function is to increase awareness of the error, which should itself come to act as the real penalty. Exercises such as the following may prove useful:

1. A pair of toy telephones can be used with which the pupil makes a call to the clinician across the room. If the pupil catches himself in an error he stops, says, "Oh, oh!" corrects the error,

and goes on. If the clinician hears an error that the pupil fails to catch, he hangs up.

2. The pupil may be required to carry a card and a pencil during a particular time and make a mark on the card each time he catches himself in an error.

3. The pupil can be required to collect a list of words on which he either catches himself or someone else catches him in an error in such nucleus situations as those previously suggested. He can then be assigned to use these words in negative practice assignments in which he deliberately and intentionally makes the error.

Negative practice. Other uses may be made of negative practice during the whole of one of the nucleus situations or with respect to particular words. An older child may be assigned to use negative practice on particular words in a series of assigned telephone conversations or in visiting stores and asking prices and other information about merchandise. He should be required to make a definite report on success in carrying out such assignments.

Negative practice assignments such as these can be valuable in helping to complete the process of transfer of the new habit to ordinary casual speech. They tend to make the pupil highly aware of his errors so that he can eradicate them. If the pupil understands the purposes of the assignment there is no danger that the error habit will be strengthened rather than weakened.

Probably the only risk in such assignments is that the pupil might find them psychologically disturbing. He may be reluctant to exhibit his error deliberately in public, even though he has made the same error many times before. However, no undue embarrassment should occur if he is carefully prepared for the assignment.

General considerations The preceding pages have presented a rather complete description of the general process of correcting errors of articulation. This description has been organized mainly around goals to be accomplished at various stages of the process. The specific techniques for reaching the goals may vary considerably from one case to another; the ones described are only suggestive, and the ingenious clinician will be able to devise many interesting and worthwhile variations and improvements. But the goals stated here are believed to be the basic ones.

In concluding this description of the process of correcting articulatory disorders certain specific questions which have not previously been fully considered will be discussed.

ORDER OF TEACHING SOUNDS. One of the questions on which there has been some argument among authorities in speech correction is the question of the most appropriate order for teaching the various sounds which the child misarticulates. A preference has been stated previously for starting with the more easily corrected errors and working progressively toward the more difficult ones. Ways of using information from the articulation test in determining this order were suggested, and although such information is certainly basic in this connection, there are at least two other important considerations.

The first of these is the visibility of the articulatory positions for the various sounds. Sounds which are made with easily visible tongue or lip contacts, such as *f* and *th*, will usually be easier for a child to imitate than sounds having more hidden articulatory contacts, for example, *r* and *s*. Although this matter of visibility will usually influence the results of that part of the articulation test in which the child's ability to modify his production of misarticulated sounds is being measured, it is probably important enough to be given separate consideration. This is especially true if the results of the articulation test do not give clear indications as to the specific sounds he will find most easy to imitate when he is strongly stimulated.

The second factor which should be considered is the possible effect of any complicating structural deviation, such as an oral or dental malformation. In the majority of instances in which structural deviations are found, their complicating effects will be much greater for certain sounds than for others. And often it is true, also, that a speech handicapped child with an organic involvement makes certain articulatory errors which are not at all related to that involvement. Such errors should be relatively easy for the child to correct, and the encouragement and motivation derived from success with one or more such easy sounds are invaluable in establishing rapport between clinician and child and in establishing the interest and confidence essential for effective work on the more difficult sounds.

It seems obvious that no exact order in which sounds should

be taught can be prescribed; too much depends on the individual who has the articulation problem. But a careful analysis of the factors mentioned above—cues from the articulation tests, visibility of the sounds, and influence of organic involvement, if any—should enable the speech clinician to make a reasonably accurate prediction for each child concerning the relative ease or difficulty with which certain sounds will be learned and hence, the appropriate order for teaching them in the corrective program.

NUMBER OF SOUNDS THAT MAY BE TAUGHT SIMULTANEOUSLY. Just as it is not possible to lay down rules on the exact order in which everyone should be taught sounds, so one cannot give a universal rule concerning the number of sounds on which to work at one time. Again, too much depends upon the individual—how rapidly he is able to learn, the types of sound errors he makes, how difficult the particular sounds may be for him, and so on. However, it is possible to state a few general principles which can be used as guides.

It should be emphasized that the general tendency of teachers and parents is to try to hurry the child. Neither thorough nor efficient learning results. As should be clear to the reader who has followed this chapter thus far, the process of teaching a sound involves much more than showing the youngster what to do with his tongue or helping him to make the sound a few times in isolation. There are definite goals to be accomplished throughout the process of learning a new sound and a clinician who gives careful attention to the reasonable attainment of each goal before going on to the next will be rewarded by better progress than if the process is rushed. Progress is sometimes slow, at times almost imperceptible, but nothing will be gained by skipping a part of the learning process simply because it is not rapidly accomplished. Indeed, this will almost certainly insure failure at the next step, which depends for its successful completion on the thoroughness of the work that has preceded it. Rather than hurry on when progress lags, one will do better to go back and review and learn more thoroughly the earlier steps.

By the same token, one should not attempt too much at one time. It is far better to teach one sound at a time and teach it well than to try for more and encounter defeat. As a general

rule, therefore, a speech clinician will start work on one sound only. Work on a second sound will usually not be begun until the learning process is well along with the first. Before beginning on a new sound, it probably would be well in most cases to carry the work on the first sound through the stages where the child can produce it easily and effortlessly in at least a few commonly used words. The process of completing the transition to connected speech can ordinarily be carried along while the learning of the new sound is in the preliminary stages. As with almost all other rules which apply to human behavior, this one has its exceptions. They should not be made, however, without good reason and careful consideration.

One exception, often made safely, occurs with respect to the pairs of sounds that we call, phonetically, "voiced" and "voiceless cognates."[33] These are pairs of sounds in which both members are made with the same positions and movements of tongue, jaw, and lips. The only difference between the two members of each pair is that during the production of the voiced sound the vocal cords vibrate and during the production of the voiceless ones they do not. Examples of pairs of voiced and voiceless cognates are: *v* and *f; z* and *s; b* and *p; d* and *t; g* and *k;* the *th* in bathe and the *th* in bath. (In each case the voiced sound is given first.) It sometimes happens that a child will make errors on both sounds of one or more of these cognate pairs. Since the two sounds are made so similarly, it is usually possible and more efficient to work on both of them at the same time.

Exception to the rule of one sound at a time can also be made sometimes with older children who, because of their stronger motivation, can work more rapidly than younger children and can work on more things simultaneously without becoming confused. However, the rule to "make haste slowly" will still generally apply. Probably, at most, not more than three sounds should be worked on at the same time—even with an adult.

One other caution may perhaps be in order here. A clinician should never be in such haste to get on with the teaching of a new sound that the transition of the previously learned sound to connected speech is neglected. The learning is not complete until the pupil makes automatic use of it in his ordinary everyday talk-

[33] See Appendix V.

ing. There is small value in just knowing how to make the correct sound. The error must be stamped out; the correct sound must be habituated. And that process cannot be entrusted to the unsupervised efforts of the pupil.

GROUP WORK VS. INDIVIDUAL WORK. Speech correction is, to a considerable extent, an individual process. Different individuals make errors on different sounds and make them in different ways. The causal factors differ from person to person. Such complicating factors as deficient oral and dental structures are present in some cases and not in others. Moreover, pupils learn at markedly different rates, and so techniques of correcting articulatory errors must always be adapted to the person with whom they are used. Hence, much of the speech clinician's work must be done on a completely individual basis.

Nevertheless, there are many advantages in group work and it definitely has a place. Children in groups tend to stimulate and motivate one another. A group situation provides opportunities for realistic speaking activities. Many types of speech games can be played in groups which could not be played in individual lesson periods. Group speech correction also has advantages from a mental hygiene point of view. Since each child gets a chance to compare his speech with that of others and find out at first hand that other children also have speech problems, he may not feel so singled out as a child who is slow or different in some undesirable way. All this is apart from and in addition to the fact that group work is, when correctly used, more economical of the speech clinician's time. The advantages of group work are sufficiently great so that for most types of cases some of it, in addition to individual lessons, is probably more desirable than individual lessons exclusively.

Many of the activities which have previously been discussed can be utilized as group retraining procedures. Ear training games and activities are one example. Much of the practice used to transfer new sound habits to ordinary continuous speech also can be provided. The basic principles for conducting work in groups are the same as those already discussed. Continuous auditory stimulation is just as important and must be provided in group instruction no less than in individual lessons. Constant checking on progress of individuals with special individual atten-

tion to successes, near successes, and failures, is no less important. The skilled speech clinician will never allow group instruction to deteriorate to dull routine drill in which pupils read lists of words or sentences, without adequate stimulation with the correct sound, and without adequate attention to the results produced. Such group instruction is not only dull and uninspiring; it literally fails to instruct.

The proportion of time to be spent in group work and in individual work may vary considerably from pupil to pupil. For some children who present only a few simple sound substitutions of an entirely functional nature, well-planned and executed group work may be enough. Most children, however, will need some individual lesson periods in addition to the group activity. And for a few whose misarticulations are severe and who make many speech errors of the kind that are difficult to correct, practically all of the work may need to be intensive, individual training. This is all the more so if there is any extensive organic involvement. It is generally not sufficient, certainly not most desirable, to try to carry on all speech correction instruction with groups.

WHAT THE CLASSROOM TEACHER CAN DO

It should be obvious to any teacher who has thought about the problem that the fact that the school employs a trained speech clinician does not relieve her of all responsibility toward the special problems of the child with an articulatory problem. In numerous ways she can smooth the way for children with such handicaps.

In Chapter Two we discussed at length the responsibility of the classroom teacher to see that the speech handicapped child has every possible opportunity to develop at his own rate in spite of the handicap.[34] Methods for creating optimum learning conditions have been outlined. Specific ways in which the teacher can insure that the child is not unnecessarily penalized by his handicap, either by the other children or by the teaching methods employed, have been described in detail. This discussion will not be repeated here, except to emphasize the importance of the con-

[34] Further discussion along these lines is to be found in Chapter Nine.

tribution which the classroom teacher can make. Any experienced public school speech clinician can testify to the effect of the classroom teacher on the progress of pupils in correcting their speech problems. The clinician has seen at first hand the more rapid progress of pupils fortunate enough to have really excellent teachers.

The foregoing discussion of the process of correcting articulatory errors also suggests many ways in which the classroom teacher can be of direct assistance in the retraining process. The clinician will need to depend on the classroom teacher for help in having the child carry out assignments aimed at incorporating the new sound habits into running speech. A number of ways in which the classroom teacher can assist in this process have already been suggested. It may be added that the alert classroom teacher who is informed about speech problems, at least to the extent represented by this book, and who keeps posted on the progress of her pupils in their speech correction lessons, will be able to devise and suggest to the clinician ways of being helpful. She, better than the clinician, will know of occasions for talking and oral recitation in class which can be utilized as nucleus situations for practice in good speech habits. She should, of course, be guided by the clinician in rendering such assistance, but the clinician will welcome her suggestions and offers of cooperation.

The clinician also will need to depend on the classroom teacher for information about the child which may be important and relevant to his speech problem. The clinician may therefore ask the classroom teacher to furnish him with information concerning various aspects of the child's behavior, both in the classroom and on the playground. Is he shy and withdrawing? Is he hyperactive and aggressive? Or does he seem well-adjusted under most circumstances? Does he tend to be talkative; does he tend to be extremely quiet; is he average in this respect? Does any refusal to talk seem to result from embarrassment about his speech problem? How does he react to other children? How do they react to him and his speech problem? Are there any circumstances in which his speech problem seems worse than in others, or to cause him more embarrassment? Does he seem to have more difficulty, or show more embarrassment, with adults or with children his own age? What kinds of things interest him most? How is he best

motivated? What kinds of rewards and penalties are most effective? Which ones produce undesirable reactions? To these and similar questions the classroom teacher may be able to help supply answers. In order to do so, however, she will need to become a keen observer of her pupils. She will need to know them intimately as individuals. Her answers will be most useful if they are based on specific observations and if she can give concrete illustrations of particular matters of behavior.

Beyond these important considerations, there is much else that the classroom teacher can do. In the interests of orderly arrangement, the additional things that she can do, particularly if there is no speech clinician in the school, are discussed in the following section. The suggestions made there will have to be adapted, of course, to the situation in which the classroom teacher and the speech clinician work together.

If there is no trained speech clinician in the school When there is no trained speech clinician in the school, what can the classroom teacher do beyond seeking to understand the child's problem, doing her best to create conditions that will penalize him as little as possible for his impaired speech, and recommending that he be referred to someone with thorough training in speech correction? With certain cases she can do a great deal, provided she is interested, sincerely desires to help, and is endowed with those qualities of understanding, patience, and perseverance necessary to do a job of retraining with speech handicapped youngsters. The teacher who has these qualities and is willing to put forth the effort to inform herself as thoroughly as possible—the minimum might be taken as a thorough study of this book—can take positive steps to help some of her pupils correct their articulatory errors.

Does this mean that the classroom teacher can undertake to treat speech disorders herself? Yes, with certain types of cases. Does it mean that the classroom teacher can fill the place of the special speech correction teacher? No, except to a limited extent. There is no substitute for the training and experience possessed by the specialist if all children with speech disorders are to have their chance. The classroom teacher, however, can partly bridge the gap between what is and what ought to be.

Most of what she can do has already been fully described in the section of this chapter dealing with remedial procedures. Many of these techniques can be employed by the person without special training, especially with children who have relatively simple articulatory problems, and they will make up the overwhelming majority of the cases. The teacher will need to follow carefully the steps previously described. She can, if she will employ the suggested procedures, provide the necessary ear training work. The stimulus method for teaching new sounds is basically a simple procedure, but it will be found effective enough to secure the desired results with all but a few cases. Phonetic placement techniques require more knowledge of the mechanics of sound production than most persons who are not specialists usually have. But the mirror work type of phonetic placement technique is not extremely difficult to carry out. The other steps in the process of correcting articulatory errors also can be followed by any teacher who will inform herself as to how they ought to be accomplished. She will need to talk with parents and explain the work she is doing and enlist their cooperation. Sometimes she will meet with resistance from a parent who refuses to recognize that a son or daughter has a problem requiring special help, but more frequently the response will be an eager desire to cooperate.

The principal risk is that the teacher without special training will attempt too much. As has been indicated, her efforts should usually be confined to the simpler types of cases. Children whose speech problems are complicated by any significant organic involvement frequently will be difficult cases, and the correction of their disorders probably should not be undertaken by the nonspecialist. Children whose problems either are due to or have become complicated by emotional maladjustments are probably beyond the scope to which the nonspecialist should confine her efforts unless she can get help and guidance from a specialist. If such guidance and supervision are not available, these cases are better referred to a speech clinic or other special appropriate agency. But even with these more difficult cases excluded, there will still be much to do. Most of the articulatory problems found at the lower grade levels are rather simple, uncomplicated cases of poor habit formation. Usually they are corrected more easily in the early grades than if the faulty habits are allowed to be-

come more firmly set over a longer period of years. Even in the upper grades, the majority of cases are primarily the result of faulty learning. What most of these pupils need is someone to show them how to develop better habits and to give them careful guidance during the process. They can be shown how by employing the techniques herein described.

In deciding whether or not a case is suitable for her to work with, the classroom teacher should first look for any obvious structural deviations. Deviations of sufficient severity to be significant will usually be fairly obvious. In case of doubt, professional medical or dental advice should be sought.

Emotional involvement is not always so easily recognized. However, often there will be overt signs if the teacher is alert to them. Out-and-out behavior problems are usually overt enough to prevent their escaping anyone's attention. Extreme shyness or withdrawal also will usually be obvious. The more difficult cases, however, are sometimes those who have learned to throw a protective cloak of diffidence about their sensitiveness concerning their problems. Such seeming diffidence may sometimes mask deep-rooted frustrations and anxieties and present a baffling problem even to the trained specialists.

Children with no apparent significant organic or emotional involvement can be considered ones with whom the classroom teacher, with no more training than that provided by this book, can try her hand at speech correction. With these the risk that a person without special training may do more harm than good is almost negligible.

Progress may seem slow at first, for two reasons: first, because the teacher has not developed realistic standards by which to measure progress and may therefore expect too much; and second, because in speech correction work, as in other things, skill is acquired only after a certain amount of practice and experience with the techniques. But progress will usually come if the work is carefully planned and the techniques are properly used.

It cannot be overemphasized that the teacher will need constantly to guard against the urge to hurry. That point has been stressed on several occasions in this chapter, but it cannot be made too strongly. Haste will almost surely result in slipshod instruction and partial attainment of goals. The resulting half-estab-

lished good speech habits will never replace errors that have been thoroughly fixed by years of practice. It is better to err on the side of overlearning than to risk failure and frustration because learning has been inadequate.

The teacher who follows the suggestions just given will find herself spending no small amount of time at the project she has undertaken. In addition to the time actually passed with pupils, she will have to take time to plan the work, to prepare materials, to devise assignments, to talk with parents, and to study. Nevertheless, it is the authors' hope that some teachers who read this book will accept the challenge and thus provide needed help for some speech handicapped children whose problems would otherwise be neglected.

FOUR



DISORDERS OF VOICE

An excellent voice is an almost universally admired characteristic. We react favorably to the voices of certain of our acquaintances and perhaps unfavorably to others. We may base our listening preferences for particular radio or television personalities on how we react to their voices. There is a commonly held idea, which we shall presently see has some basis in fact, that particular vocal characteristics disclose significant clues concerning an individual's personality.

It is apparent, then, that a good voice is a distinct asset and a poor voice may be an unfortunate handicap. If a person's voice is deficient enough in some respect that it is not a reasonably adequate vehicle for communication, we may appropriately think of the problem as constituting a voice disorder. Even among school children voices will vary a good deal, and a few children will have voice problems that are significantly handicapping. It is the purpose of this chapter to discuss the more common voice disorders, particularly those that the teacher is likely to find

occasionally among the children in her classroom, with a view to seeing what can be done about them.

AN ESSENTIAL ORIENTATION TO ACOUSTICS

It will be easier to understand what happens in various kinds of voice disorders if we first have in mind a few basic ideas concerning the normal functioning of the vocal mechanism. Although the organs used in speaking and vocalization have vital biological functions, our present concern is with their functions in generating sound. Thus it is basic to our discussion that we have some fairly clear concepts about sound—what it is, how it is generated, how it varies, and how these variations affect the perceived attributes of sound; for example, whether we hear a sound as high or low in pitch, loud or soft, mellow in quality or harsh, and so forth. It is the purpose of this section to present certain fundamental concepts concerning sound in a simple relatively nontechnical manner. It is our hope that this brief discussion may make the rest of the chapter more meaningful for those readers who have not previously become familiar with these ideas.

Almost everyone is familiar with the simple but basic idea that sound is closely associated with vibration. By everyday experience we know that sound can be created by setting objects into vibration as does the musician who causes a violin string to vibrate by bowing or plucking it. We know that a radio or television loudspeaker vibrates when it generates sounds. We know also that sound can be produced by setting columns of air into vibration as, for example, in blowing across the mouth of a bottle.

We are probably familiar also with the idea that sound is transmitted from one place to another as vibration, that it travels from the source where it is created to the ear of a person because the vibrating source has set the air into vibration, and that the person who hears it is able to do so because the drum membrane in his ear has been caused to vibrate by the vibrating air.

Sound as a pressure phenomenon These vibrations which are so much a part of our everyday experience have dimensions which can be measured, described, and studied in various ways.

Let us start by considering a sound which is being transmitted through the air. We call the vibratory disturbance of the air, by means of which the sound is transmitted, a sound wave. This sound wave consists of a back and forth motion of the particles of the air—back and forth with respect to the direction of travel of the sound wave. This back and forth motion or particle vibration can be described in a number of ways. For example, the amplitude (maximum extent) of the particle motion can be specified, or the velocity of motion of the particles can be described, and so forth. For our purposes, however, the most useful single way of thinking about sound waves is to consider them as pressure disturbances. We may not be familiar with the idea, but it is quite accurate to say that when an object vibrates so as to generate a sound, it creates a pressure oscillation (consisting of alternating increases and decreases of pressure with respect to the static pressure of the atmosphere) in the surrounding air. These pressure oscillations are very tiny relative to atmospheric pressure. Nevertheless, the idea of sound waves as waves of pressure disturbance (oscillation) is a particularly useful concept. When an object vibrates and generates a sound, it creates a pressure disturbance in the surrounding air. The air near the object passes this pres-

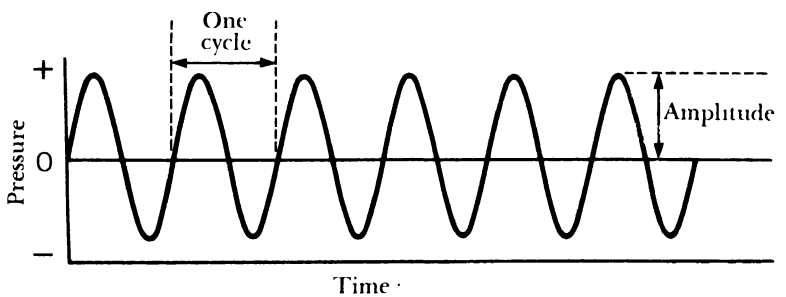


Figure 3. Graph of sound pressure oscillations of a sound wave consisting of the simplest type of vibratory disturbance in the air—one in which all vibratory energy is concentrated at a single frequency.

sure disturbance on to the air farther away as a wave of pressure disturbance. A listener may hear the sound because the wave of pressure oscillation is transmitted into his ear canal where it sets

the auditory mechanism into vibration. It is important to emphasize that sound, viewed as a pressure phenomenon, consists of oscillations of pressure. Steady pressure, or gradual increases or decreases of pressure in one direction only do not constitute sound.

Some of the basic notions of pressure oscillations may be illustrated graphically as in Figure 3. The graph represents the variations in pressure which may occur at a particular point in the air through which a sound wave is travelling. The zero point on the horizontal axis (base line of the curve) represents the static (undisturbed) atmospheric pressure. The pressure oscillations, shown by the vertical variations of the curve, represent increases and decreases with respect to static pressure which occur in time at some point in the air through which the sound wave is travelling. As we will see, sound waves which can be completely described by the very simple type of curve shown in Figure 3 do not occur often in nature. However, such curves are useful, both because they illustrate some important properties of pressure oscillations in a simple way that is easy to understand and because the more complex types of sound oscillations with which we are most concerned may be correctly viewed as compounds of such simple oscillations.

FREQUENCY. One of the important attributes of sound pressure oscillations which needs to be understood is frequency. In any vibratory disturbance, a single complete oscillation may be termed a "cycle." A statement of the frequency of an oscillatory disturbance indicates the number of such cycles which occur per unit of time. The unit of frequency now in standard usage is the hertz (Hz). Stating the frequency of a sound pressure oscillation in hertz specifies the number of complete oscillatory cycles which occur in one second.[1] Figure 4 shows two examples of such

[1] Readers who have had some previous acquaintance with concepts and definitions relating to sound, or other vibratory disturbances, will be aware that until 1965 it was standard practice in this country to express the frequencies of sound waves, radio waves, etc., in terms of cycles per second (cps). The change was made to bring usage in this country into conformity with international standard terminology. It should be noted that the change merely involves the name of the unit. The dimensions of the unit remain the same. Thus, a sound whose frequency may be stated in the new terminology as 500 Hz would have had its frequency specified in the old terminology as 500 cps.

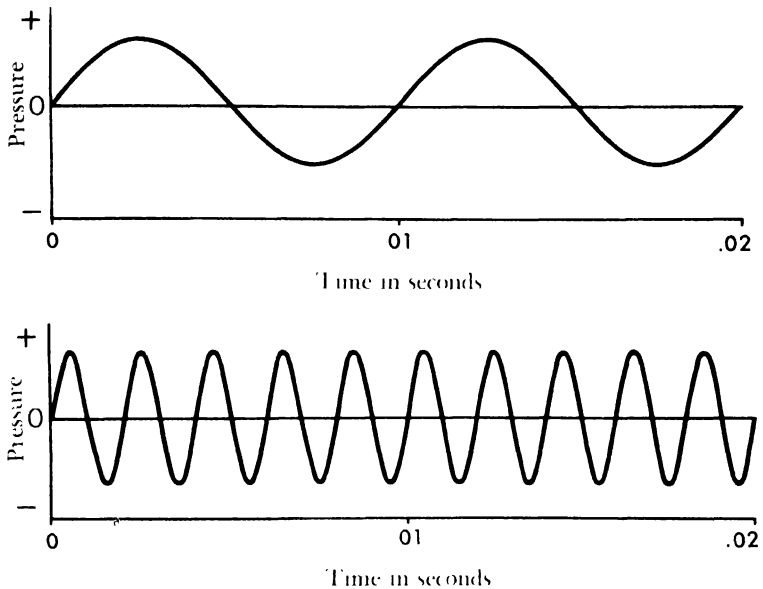


Figure 4. Sound pressure oscillations of two simple vibratory disturbances of different frequency. The lower graph represents a sound wave having a frequency that is five times the frequency of the sound wave represented by the upper graph.

pressure oscillations which differ in frequency. Reference to the time scale shows that one complete oscillation of the upper curve occurs in 1/100 of a second. The frequency of the sound vibration represented may therefore be stated as 100 Hz. The lower curve indicates that five complete oscillations occur in each 1/100 of a second. Thus its frequency is 500 Hz. The frequency of a sound is closely related to the perceptual attribute of sound that we call "pitch." It is not entirely accurate to say that the pitch of a sound is completely determined by its frequency, because certain other physical properties of sound may be shown to have some effect on the pitch we hear. However, under most circumstances, frequency is the principal physical attribute that determines pitch. For the sounds represented by the pressure oscillation curves of Figure 5 we can be very certain that the curve having the higher frequency will sound higher in pitch.

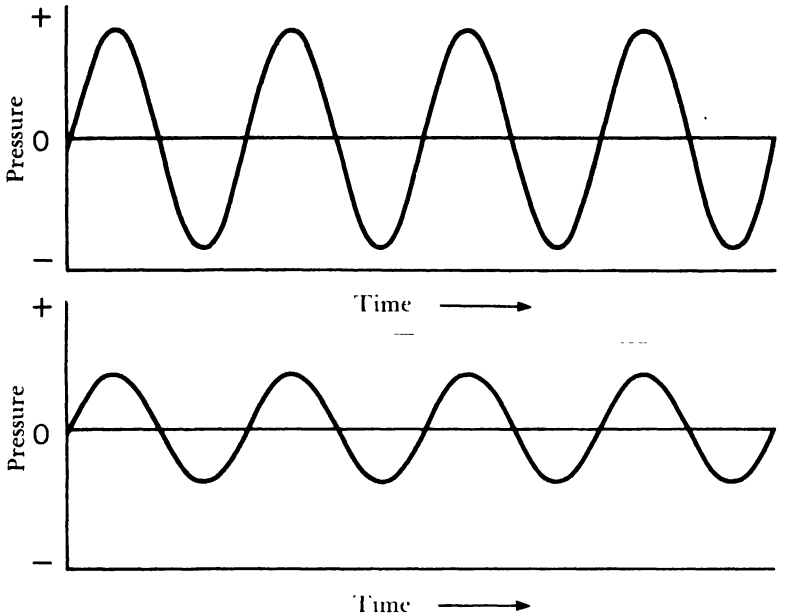


Figure 5. Sound pressure oscillations of two simple vibratory disturbances of different amplitude.

AMPLITUDE, INTENSITY. Another important dimension of sound pressure oscillations is amplitude. Figure 5 shows curves representing two sound pressure oscillations which differ in amplitude. Sounds of any frequency can vary over an extremely large range of pressure amplitudes, from pressure oscillations so small that the ear cannot detect them under the most ideal listening conditions to those so large that they can cause pain in the ear. It seems quite logical that amplitude, which is a measure of the magnitude of pressure oscillation, should be related to the magnitude of the auditory sensation that it will stimulate in a listener. It is quite true that the loudness of a given sound is importantly related to its sound pressure amplitude, and increases or decreases in loudness will usually be associated with corresponding variations in pressure amplitude. However, it is not strictly accurate to say that loudness is determined completely by sound pressure amplitude. For example, two sounds may have the same sound pressure amplitude but one may sound considerably louder than

the other, especially if the two sounds differ in frequency. This happens because our auditory systems are not equally sensitive to all frequencies. Thus, a sound having a frequency in the range to which our hearing mechanisms are relatively insensitive may sound quite soft even though its sound pressure amplitude is equal to another sound whose frequency is in a different part of the range where our hearing is more acute. Although the relationship between loudness and sound pressure amplitude is thus somewhat complicated, it is, nevertheless, useful to think of variations in loudness as being related primarily to variations in sound pressure amplitude. This will cause no difficulties if we are thinking about increases or decreases in the loudness of a particular sound or if we are thinking about differences between sounds whose frequencies are very similar.

The term "intensity" is often used to mean the dimension of sound which we have up to now called "sound pressure amplitude." In the science of acoustics a technical distinction is made between these two terms. Strictly speaking, the intensity of a sound is a measure of the rate at which sound energy is being radiated in a sound wave. It is expressed in power units rather than pressure units.

At first glance, it would seem logical to suppose that there should be a relatively simple relationship between pressure amplitude and intensity. Actually these two physical properties are closely related and under certain conditions the relationship may be given a simple mathematical statement. Unfortunately for those of us who would like to have things simple, this neat relationship holds in a precise sense for a limited set of conditions not often encountered outside of the acoustics laboratory. Hence, it is not quite correct, in a technical sense, to use the terms "intensity" and "sound pressure amplitude" interchangeably. However, because "sound pressure amplitude" is a rather long and awkward term, some authors have used the term "intensity" as a convenient word to refer to the general magnitude of a sound vibration, even though this is not strictly correct in a technical sense. For most of the conditions with which we shall be concerned there will be at least a reasonably approximate relationship between intensity and sound pressure amplitude, and so no great harm will be done by speaking of the intensity of a sound instead of its sound pressure

amplitude. Thus, for the sake of convenience, we shall follow the precedent already mentioned and use the term "intensity" in this general sense.

Pure tones Thus far our discussion has been concerned with the very simple type of sound pressure oscillation illustrated by Figures 4 and 5. Vibrations of this type, which are frequently called "pure tones," are simple in an important physical sense. All of the energy in the sound wave is concentrated at one frequency. Such sounds can be completely described by specifying just three dimensions: frequency, intensity (or amplitude), and duration.

Complex sounds Most of the sounds we hear in our everyday noisy surroundings, however, are not pure tones, consisting of only one frequency. Rather, they are complex sounds, compounds of many frequencies. If this seems a bit puzzling because our ears do not usually notice the separate components of complex sounds, it may help to remember that something very similar happens with respect to another form of vibratory energy to which our sense organs are receptive, namely, light. Nearly all light that we see is a mixture of many different wave lengths (frequencies). Yet we see the mixture of wave lengths as a single shade or hue. We do not detect the colors which correspond to separate wave lengths. In a somewhat analogous manner, our auditory mechanisms respond to complex sounds by perceiving a unified blend of sound which is the result of all the frequencies represented in the compound wave motion.

SPECTRAL COMPOSITION. To describe a complex tone completely we must specify the frequencies of all the components, together with their respective amplitudes. Just as a particular light may be perceived as being white or orange or green, depending on the wave lengths represented in the mixture, so sounds may have different perceived character depending on the distribution of energy or amplitude among the frequency components of the sound. The wave length characteristics of radiant energy are often referred to as the spectrum of that energy. Thus the wave lengths that may be seen are termed the visible spectrum; the wave length characteristics of a particular color may be spoken

of as the spectrum of that color, and so on. The term "spectrum" is used in a similar manner in acoustics, and the frequency components of a complex sound, together with their respective amplitudes, are said to constitute its "frequency spectrum." It follows that an important way of specifying the characteristics of a complex tone is in terms of its spectral characteristics or spectral composition.

Periodic and aperiodic complex sounds Complex sounds may conveniently be divided into two principal classes, periodic and aperiodic. Periodic complex sounds are those we usually think of as tones, whereas aperiodic sounds have little tonal character and we often refer to them as noises. Periodic sounds result from vibrations which are relatively regular and continue for an appreciable length of time, long enough for a regular, repeated (or periodic) pattern of vibration to be established. They result from the vibrations of bodies which have appreciable mass and elasticity—strings, reeds of wind instruments, and such. Aperiodic vibrations may be either sounds which start and stop very suddenly, such as clicks and pops, which are spoken of as transient sounds, or they may result from a turbulent disturbance of the air which has a more continuous but random and irregular character, for example, the hiss of air escaping from a punctured tire.

Our speech mechanisms produce both kinds of complex sounds. The tones produced when a vowel is spoken or sung have their source in the relatively regular vibrations of the vocal folds in the larynx and are generally periodic in character. On the other hand the voiceless consonants are aperiodic noises. Some, such as *s* and *f*, are generated by forcing air through a narrow constriction so as to produce a turbulence in the breath stream; others, such as *p*, *t*, and *k*, result from sudden release of impounded air thus generating a transient noise; still others, for example *z* and *b*, combine periodic and aperiodic components, since an aperiodic noise due to turbulence or an explosive release of air is added to the relatively periodic vibration from the vocal folds.

FUNDAMENTAL FREQUENCY AND OVERTONES. Since our present discussion is concerned with voice, and voice is produced by the relatively regular vibrations of the vocal folds, we are mainly

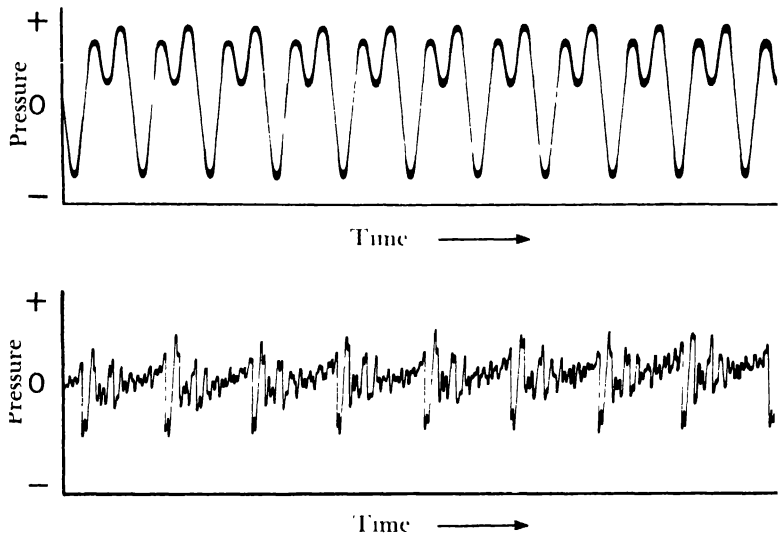


Figure 6. Sound pressure oscillations of two periodic complex tones. The upper graph represents a violin tone which contains significant energy at three harmonically related frequencies. The lower graph represents a spoken vowel tone which contains energy at many harmonically related frequencies.

concerned with periodic complex tones, although some voice disorders are characterized by the presence of aperiodic components. As previously indicated, periodic tones have a regular pattern of vibratory motion or pressure disturbance which is repeated at a regular rate. Complex tones may have very complicated looking patterns of pressure variations when compared to the curves of pure tones because they consist of numbers of components, each having a different frequency, whereas pure tones have only one component. Figure 6 shows two examples, one from a musical instrument, a violin, and one a vowel sound. Both have a fundamental pattern which is periodic, that is, regularly repeated within a given period of time. The repetition rate or frequency of this complete pattern of vibration is the fundamental frequency which is its most important characteristic insofar as determining its pitch is concerned. This means that variations in the fundamental frequency will cause us to hear variations in the pitch of

the tone, whereas the other frequency components can be changed a great deal with little, if any, effect on our perceptions of pitch. Usually the fundamental frequency is also the lowest frequency in a complex tone. Musicians usually speak of the higher components of such a tone—those having higher frequencies than the fundamental—as overtones.

One of the interesting facts about the higher frequency components of periodic tones is that their frequencies are exact integer multiples of the fundamental frequency. That is, a periodic tone which has a fundamental frequency of 100 Hz may have overtones of 200 Hz, 300 Hz, 400 Hz, and so forth. But it will not have components at frequencies in between these points. Components which are related in this exact integer multiple fashion are called harmonic components or simply harmonics. Complex periodic tones consist, then, of harmonics and do not have components at frequencies which are not harmonically related to the fundamental frequency. A different way of stating the same point is to say that the spectrum of a complex periodic tone will show energy only at frequencies that are harmonically related to the fundamental. Another interesting fact about periodic complex tones is that each of the components is a simple vibration of the type that was represented by the graphs of Figures 3, 4, and 5.

As previously stated, the particular frequencies of the components found in a complex tone have little to do with the pitch of the tone as we hear it. Likewise, the amplitudes of the harmonics may vary without affecting the pitch significantly. However, the presence or absence of various harmonics and their respective amplitudes have important effects on other aspects of our perception of these sounds. For one thing, the intensity of the tone, and thus the loudness with which it will be heard, is the result of adding together the intensities of the fundamental and the overtones.

TONE QUALITY OR TIMBRE. Another perceptual attribute of complex tones is that of tone quality or timbre. It is a familiar fact that we can tell the difference between the tones of two musical instruments (such as a trumpet and a saxophone) that are playing the same note even when the tones from the two are equally loud. This difference, which enables us to distinguish

between two tones that are equal in pitch and loudness, is a difference in tone quality or timbre. Distinctions in tone quality result from the fact that complex tones which are equal in fundamental frequency and intensity may still have different overtone structures, or spectra.

Tone quality differences are important in speech, since we recognize the differences among vowel sounds (and some voiced consonants) because these sounds have different spectral compositions, and therefore different tone qualities. Tone quality differences are also important in helping us distinguish among different voices. Of course, voices may sound different in pitch and in loudness, too, but much of our basis for judging a voice as pleasing or displeasing depends on its tone quality. When we talk about that aspect of voice which is concerned with its tonal quality, irrespective of the pitch or loudness, or the particular vowel that is spoken or sung, we usually apply the term "voice quality."

To summarize, we can classify sounds as simple, single-frequency sounds (pure tones) or as complex sounds having many frequency components. Complex sounds may be further subdivided into periodic sounds (tones) and aperiodic sounds (noises). The attributes of periodic complex sounds are (1) fundamental frequency, which relates closely to pitch; (2) intensity (total of the respective intensities of all frequency components), which is closely related to loudness and (3) spectral composition (distribution of intensity among the fundamental and overtones), which relates most closely to the tone quality that we hear. Speech sounds and tones are complex in character, some being periodic tones, some aperiodic noises. Vocal tones, however, from which listeners gain their impressions of a person's voice—impressions, that is, of pitch, loudness, and voice quality—are mainly periodic in character.

RESONANCE. In order to understand how complex tones, including vocal tones, are generated and given particular characteristics of spectral composition, one further matter of acoustics needs brief discussion. That is the phenomenon of resonance. A complete discussion of this topic would take more space than would be appropriate here. The present discussion will be restricted to certain relatively simple concepts concerning resonance

that will help in understanding how voice, with all its variations, is generated.

The primary function of resonance, insofar as voice is concerned, is in the role it plays in determining the spectral composition of vocal sounds. Because most vibrating bodies have complex patterns of vibration and generate complex rather than simple tones, one of the factors which determines the spectral composition of complex tones is the particular complex pattern of motion executed by the vibrating body which acts as the sound source. If the vibrating source radiates all of its energy directly into the air without exciting vibrations in some other object to which it is coupled, the spectral composition of the sound wave in the air will depend only on the complex pattern of vibration of the sound source. However, in many kinds of sound producing mechanisms the vibrations that originate from the source not only radiate energy into the air but also excite vibrations in other objects to which they are coupled. A familiar example is a stringed instrument such as a violin. The vibrations of a violin string not only act on the air directly but also excite vibrations in the body of the violin. As a result these vibrations, when radiated to the air from the body of the violin, have different characteristics than they would have if they were radiated directly from the violin string.

In some systems very little of the sound energy of the vibrating source can reach the air without first being transmitted through an intermediate part of the system which receives its vibration from the source. It is convenient to think of a total system of this kind as consisting of (1) a source of vibrations and (2) a transmission system through which the vibrations must pass to the surrounding air. In the trumpet or trombone the source of vibrations is the pulsations of air produced by the vibrating lip of the musician acting in the instrument's mouthpiece. The transmission system is the column of air contained within the tubes of the instrument. The sound vibrations generated by the source can be radiated into the surrounding air only by being transmitted through the column of air. In some respects the vocal system is analogous to such a wind instrument.

In a system of this kind the complex pattern of vibration that is radiated into the surrounding air may be quite different from

the pattern of vibration that was generated by the source. In fact it is highly unlikely that the sound will pass through such a transmission system without having its complex pattern altered by the characteristics of the transmission system. In many instances the alteration will be sufficient to change the sound very significantly. One of the very important ways in which the transmission system may act on the sound is to alter the distribution of energy among the components of the complex sound; in other words, modify its spectral characteristics. This kind of change is nearly certain to occur because almost all systems capable of acting as acoustic transmission systems will have resonance characteristics.

FREE VIBRATION. To understand this a little better one needs to know that a general property of most objects which can be made to vibrate is that they can be set into vibration much more easily at certain frequencies than at others. This is true of mechanical vibrators such as strings and tuning forks and it is equally true of air enclosed in tubes or cavities. The latter case is of particular interest to us in relation to the vocal system. When the air in such a tube or cavity is excited in some manner which does not restrict the nature of vibration of the air, it will vibrate at a characteristic frequency (or frequencies) which depends on the shape and dimensions of the tube or cavity. The characteristic frequency (or frequencies) of such freely vibrating objects are spoken of as the *natural* frequency or frequencies.

FORCED VIBRATION. A somewhat different but related case occurs when the tube or cavity is coupled to a source of vibrations in such a way that the vibrations emanating from the source excite the air within the tube or cavity but also control to a considerable degree the nature of the vibrations that may take place. This is a case of forced vibration rather than the free vibration of the previous example. In such instances the air within the tube or cavity must vibrate only at frequencies which are present in the complex pattern issuing from the source. The enclosed air will, nevertheless, vibrate much more readily at those frequencies which are close to its natural frequency or frequencies.

RESONATOR. The tube or cavity is now said to be acting as a resonator. The frequency or frequencies at which it tends to vibrate most readily are called the resonant frequency or fre-

quencies. The resonant frequencies are determined by, and are closely akin to, the natural frequencies that the resonator would show in free vibration. Resonators consisting of enclosures of air may be simple resonators having only one mode, or resonant frequency, or they may have a number of resonant modes. Bottle-shaped cavities have one principal mode which depends on such factors as the volume of air enclosed and the dimensions of the neck leading into it. A tube or pipe has many modes, their exact frequencies being dependent on the length of tube and whether it is open at one end, open at both ends, or terminated in some other fashion.[2] There also can be, of course, complex systems composed of complexly shaped tubes and cavities connected together; such systems will have a number of response modes. From our point of view, the most important property of such resonators or resonant systems is that they are frequency selective, that is, they can be set into vibration much more easily at certain frequencies than at others. Consequently, these systems (the air enclosed in the tubes and cavities) will vibrate at much greater amplitude at these resonant frequencies.

OUTPUT SPECTRUM. Consider such a system which is closed at one end by a vibrating source and open to the air at the other. The construction of the whole is such that most of the energy of vibration from the source must pass through the system of tubes and cavities to reach the surrounding air. Now suppose that the source (sound generator) generates a complex periodic tone. The spectrum of this tone will have many frequency components whose respective amplitudes depend on the characteristics of the source. This tone will excite the air in the tube-cavity system, and at the open end sound energy will be radiated to the surrounding air. Now assume, as is almost certain to happen, that certain components in the spectrum of the source vibration have frequencies that match or almost match the resonant frequencies of the tube-cavity system. The air in the tube-cavity system will vibrate with much greater amplitude at these frequencies than at others. Thus, at the output end of the system, the spectrum will show greater amplitude for these frequencies than for those which

2 In theory, a tube has an infinite number of modes although only a few of these are likely to be in the frequency range of interest.

do not correspond to resonant modes of the tube-cavity transmission system.

The spectrum which is radiated from such a system is determined by two factors: it will depend on the spectrum that is generated by the source of vibrations, and it will depend also on the response characteristics (resonant modes) of the tube-cavity transmission system. Now suppose that the construction of the tube-cavity system is such that its shape and dimensions can be changed. Because, as we have seen, the resonant modes of such systems are related to their shapes and dimensions, the response characteristics of the transmission system will be changed and the output spectrum will show a different distribution of amplitudes among its frequency components. It should be understood that the variations in sound spectrum which may result from transmission systems having different resonance properties may be very large.

HOW VOICE IS PRODUCED

Let us now proceed to an example which is even more closely analogous to our own vocal mechanism. By means of this example we shall understand better how the few basic principles of sound vibration which we have been discussing actually apply to our own speech sound producing systems. It also will serve as a means of introducing a few additional ideas concerning the way in which our vocal mechanisms function. Such an example is the sound-producing system schematically shown in Figure 7. The essential parts of this system are (1) the air pressure generator (represented as a bellows), (2) the sound generator, and (3) the resonant transmission system. The sound generator in this artificial system is represented as two wedge-shaped elastic cushions whose inner edges are in contact so that no air may move between them unless some force, such as an increase of air pressure from below, causes them to separate. Because they are elastic, they tend to resist any such action. Consequently, as soon as they are separated and the air pressure has fallen slightly they tend to recoil and return to the closed position. However, if the air pressure is continued, they are forced apart again, and this action is repeated over and over. Thus an alternating opening and closing movement of

these cushions is set up. Each time the cushions open, a small puff of air is released and the air pressure in the cavity above the cushions is increased. Each closing movement interrupts the escape of air and results in a decrease of air pressure in the cavity above the cushions. In this way a pressure disturbance consisting of pulsations in the air is created in the cavity immediately above the cushions. In the previous discussion it was shown that sound is just such a pressure disturbance consisting of increases and decreases of air pressure. Hence, this opening and closing movement, which changes the steady air pressure from the bellows into an oscillating air pressure above the cushions, generates sound. Investigation of systems of this kind shows that the sound generated is generally a complex tone, having a fundamental frequency, and a considerable number of overtones.

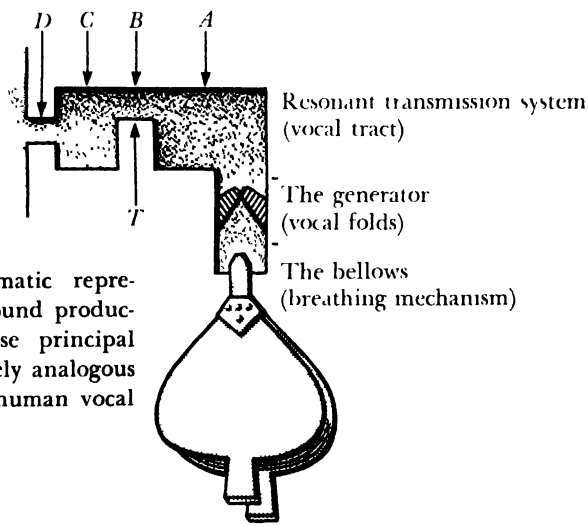


Figure 7. Schematic representation of a sound producing system whose principal features are closely analogous to those of the human vocal mechanism.

The upper part of Figure 7 has been labeled the resonant transmission system. The drawing is intended to represent a cross-sectional view of a series of cylindrical tubes connected to one another. As indicated previously, a system of this kind is a frequency-selective—that is to say, resonant—transmission system. The tone emitted from the mouth of this system has, therefore, a spectrum which is determined by (a) the particular frequencies

to which the transmission system is most responsive, and (b) the particular spectral composition of the tone generated by the cushion vibration. It is of interest that a study by Dunn indicated that a system very much like that represented in the upper part of Figure 7 is acoustically similar in a number of important respects to the human vocal transmission system.[3] Dunn showed that the important dimensions of this system which determine its resonant frequencies are the lengths and cross-sectional areas of the cavities represented at A and C and of the constrictions represented at B and D. He further showed that, by appropriate choices of these lengths and areas, such an artificial system can be made to produce all of the vowel sounds characteristic of English.

It is useful to note some of the similarities between this system and the human vocal transmission tract. The constriction shown at B divides the whole tract into two principal cavities, A and C. In the same fashion the tongue is capable of dividing the human vocal tract into two principal cavities. By changing the location of this constriction and by increasing or decreasing the height and width of the rectangular bulge labeled T in Figure 7, the length and area dimensions of both cavities and the length and closeness of constriction can be varied over a wide range of possible values. Each such change will produce a characteristic set of resonance conditions for this artificial vocal tract. The resonance characteristics of the system can be varied still further by modifying the constriction labeled D. This corresponds to the constriction produced by the lips in a person's vocal system.

The system represented in Figure 7, like that investigated by Dunn, is highly schematized, simplified and regular in shape, compared to the acoustical system with which humans are endowed. Dunn could not have carried out his mathematical investigations on a system as complex as the human vocal tract.[4] However, this difference in complexity means primarily that the resonance

[3] H. K. Dunn, "The Calculation of Vowel Resonances, and an Electrical Vocal Tract," *Journal of the Acoustical Society of America* (1950), 22:740–753.

[4] As a matter of fact, Dunn made a number of simplifications in addition to those involving cavity shaping. Figure 7 contains no cavity corresponding to the nasal passages, nor did Dunn's model. We know that when the nasal cavity is connected into the system certain changes in sound are produced. Another factor not considered by Dunn was the effect of changes in tissues composing the cavity walls. These, however, are known to be of a minor nature insofar as their effects on the resonant frequencies are concerned.

possibilities of the human vocal transmission system are even more varied than those of the schematized system.

Figure 7 has been presented as a simplified and schematized representation of the human vocal system because it is believed that an understanding of the latter might be more easily approached in this way. We turn now to a discussion of the human sound-producing mechanism.

The breathing mechanism The breathing mechanism, like the bellows of Figure 7, plays a key role in the production of voice. It consists of the lungs and windpipe (trachea), the chest cavity in which the lungs are located, and the muscles of the trunk which cause the chest to be expanded and contracted. The function of the breathing mechanism, like that of the bellows in Figure 7, is to furnish the air pressure required to set the vibrating cushions (vocal folds) into motion. It is the modulation of this steady air pressure, by the opening and closing motion of the vocal folds, which produces the pattern of air pressure variations that constitutes the vocal sound.

There has been much argument about the correct way to breathe for best voice production. Generally, this argument has concerned the location at which the maximum expansion and contraction of the torso should take place for proper speech breathing. Some have advocated what has been called "thoracic" (chest) breathing. Others have insisted on abdominal breathing as the only correct type. Still others have proposed "medial" breathing, which presumably centers the activity midway between the chest and abdomen. Another notion which seems to have had some currency is that considerable lung volume is required for good voice production; at least, voice training textbooks have frequently contained exercises in deep breathing.

It is not the purpose of the present discussion to take sides in these arguments about the optimum kind of breathing for speech. It does seem desirable, however, to consider the best available facts from research on speech breathing and to present a point of view with respect to them.

One fact which has become apparent in a number of research studies of speech breathing is that speech does not ordinarily require deep breathing. No study, to our knowledge, has shown

any relationship between lung volume and good voice. Several studies have shown that speech requires little more volume of air in the lungs than we ordinarily take in during quiet, normal respiration.[5] To produce voice, *adequate breath pressure,* not a *large volume of air,* is the important thing. The intensity of sound that is produced depends much more upon the pressure furnished by the breathing mechanism and the extent to which that pressure is modulated by the opening-closing movement of the vocal folds than upon the amount of air expelled from the lungs.

On the other hand there is reason to believe that breathing can be too shallow for the production of good voice. Recent studies of the muscular activities associated with speech breathing, employing a technique for observing the electrical potentials generated by muscles when they contract, indicate that as the lung volume is decreased more muscle activity is required to sustain the subglottal pressure required for phonation.[6] If the volume of air in the lungs is too greatly depleted, the muscular effort required may make adequate control of pressure more difficult. Probably the breathing of all but very few persons is adequate in these respects, however, and exercises to increase depth of breathing will not often be very useful in improving voice for speech. (They are more likely to be of value in the training of the singing voice, since singers are required to hold tones for relatively long durations, but that is a matter beyond the scope of this book.)

The fact is, of course, that the primary concern in breathing for voice production is the development and control of the necessary expiratory breath pressure below the vocal folds. The muscular activity required in producing expiratory pressures is not very much related to the processes of inhalation. But the arguments concerning correct ways of breathing and many of the breathing exercises that have been recommended to improve voice have concentrated attention on inhalation. Unfortunately, much re-

[5] See, for example, Michael S. Hoshiko, "Lung Volume for Initiation of Phonation," *Journal of Applied Physiology* (1965), 20:480–482.

[6] M. H. Draper, Peter Ladefoged, and D. Whitteridge, "Respiratory Muscles in Speech," *Journal of Speech and Hearing Research* (1959), 2:16–27; Roy E. Eblen, Jr., "Limitations on Use of Surface Electromyography in Studies of Speech Breathing," *ibid.* (1963), 6:3–18.

mains to be learned about the nature of the specific muscle activities and coordinations required in controlling the expiratory breath pressure for speech. Early studies of this matter by Stetson and his associates led to a belief that speech breathing movements required a rather specific coordination between the abdominal muscles and certain muscles of the thoracic region.[7] The function of the abdominal muscles was thought to be concerned with creating a posture of the trunk region—fixation of the lower ribs and firming of the abdominal walls—while certain thoracic muscles produced sudden pulse-like movements (which Stetson called the "chest-pulse") to create breath pressure pulses in the trachea. Stetson believed a separate "chest-pulse" to be required for each syllable in running speech. More recent studies have not confirmed a number of details of the Stetson work. Recordings of muscle action potentials (electrical potentials resulting from the contraction of muscle fibers) during continuous speech do not indicate separate pulse-like contractions of the chest muscles associated with each syllable, although there do seem to be "bursts" of muscle activity associated with many stressed syllables.[8] Moreover, instrumental recordings of the subglottal pressure variations during continuous speech do not show the variations in pressure associated with individual syllables that would seem to be required by Stetson's "chest-pulse" hypothesis.[9] These recent studies seem to indicate that the role of the expiratory muscles of the chest region in controlling the expiratory flow of air during speech is less than Stetson thought. On the other hand, studies of subglottic pressure during phonation indicate that increased expiratory pressure is needed as the intensity of the voice is raised and that higher subglottic pressure also is required as the pitch of the voice is raised.[10] However, the magnitudes of the subglottic

[7] Raymond Herbert Stetson, *Motor Phonetics; a Study of Speech Movements in Action*, 2nd ed. (Amsterdam. North-Holland, Oberlin College, 1951), chap. III.

[8] Ladefoged, Draper, and Whitteridge, "Syllables and Stress," *Miscellanea Phonetica* (1958), *3*:1–14.

[9] Draper, Ladefoged, and Whitteridge, "Expiratory Pressures and Airflow during Speech," *British Medical Journal* (1960), *18*:1837–1843.

[10] Jw. Van den Berg, "Direct and Indirect Determination of Mean Subglottic Pressure," *Folia Phoniatrica* (1956), *8*:1–24; LuVern H. Kunze, "An Investigation of the Changes in Subglottal Air Pressure and Rate of Airflow Accompanying Changes in Fundamental Frequency, Intensity, Vowels, and Voice Registers." Unpublished Ph.D. dissertation (University of Iowa, 1961).

pressures required for ordinary frequency and intensity levels of voice are not very great and should therefore place no unusual demands on the breathing mechanism.

Although presently available research data provide rather an incomplete picture concerning many of the details of the control and coordination of the speech breathing processes, certain statements concerning the basic essentials of an adequately functioning breathing mechanism for speech may be made:

1. The fundamental role of the breathing mechanism in phonation is to furnish the necessary expiratory pressures required to set the vocal folds into proper vibration.

2. Neither large volumes of air nor very high pressures are required for normal phonation.

3. The expiratory pressures must be under sufficient control that they may be easily regulated as required by variations in vocal frequency and intensity.

4. While neither large volumes of air nor high subglottic pressures are required for normal speech, extremely shallow breathing probably is inefficient in that it may require unnecessary muscular activity and effort.

Larynx and vocal folds The sound-generating mechanism of the human vocal system consists of the larynx and vocal folds. Its location is indicated in the cross-sectional diagram of Figure 8. However, because it is difficult to show the important features of the larynx and vocal folds in a diagram like Figure 8, no attempt has been made to do so. In Chapter Two the fact was mentioned that the larynx serves the biological function of a valve located between the throat and windpipe. The most important parts of this valve are the vocal folds. Although these structures are sometimes called the vocal cords, they are not really shaped like cords. When positioned for phonation they resemble small, movable, fleshy cushions, shaped much like the cushions shown in Figure 7. These may be separated to permit the free passage of air in and out of the lungs. The slit is narrowed when the vocal folds are brought tightly together to form the valvelike closure. When the glottal slit is narrowed and the air pressure beneath the vocal folds is increased by action of the breathing mechanism, they are set into vibration in a manner very similar to the way in

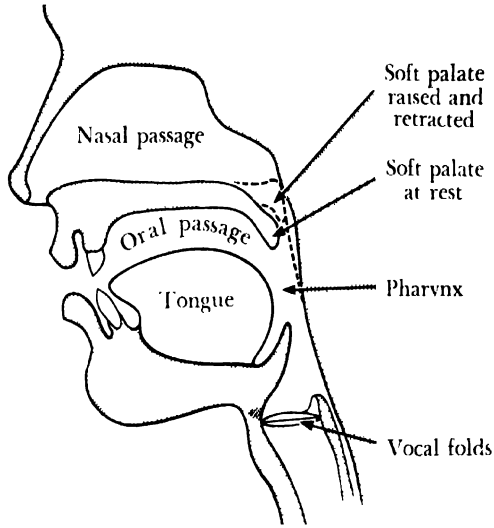


Figure 8. Schematic cross section of the vocal resonance cavities. The dashed line shows the soft palate and pharyngeal wall in the position of velopharyngeal closure, separating the nasal cavities and nasopharynx from the rest of the vocal transmission system.

which the cushions of Figure 7 were said to vibrate. That is, they execute a rapid opening-closing motion which results in modulating the steady air pressure from the lungs to produce rapid variations of pressure in the air above the glottis, and thus to produce vocal sound.

The nature of the tone produced in the larynx can be changed considerably as a result of internal adjustments within the larynx —in conjunction with adjustments of the air pressure produced by the breathing mechanism. For one thing, the frequency of the opening-closing movement that determines the fundamental frequency of the vocal tone can be varied. Other adjustments of the larynx and breath pressure can be made to vary the intensity of the tone that is generated. Increase in the intensity of the tone results from muscular adjustments within the larynx which close the folds more tightly and resist more strongly the tendency of the air pressure to blow them apart. When this happens, greater air pressure is required to separate them and they tend to recoil and close again more quickly. The result is that the glottis tends to open more suddenly and release each puff of air under greater pressure than when a lower intensity of tone is being produced. The glottis also tends to close more quickly, and more com-

pletely, and to stay closed for a longer portion of each complete opening-closing movement for a high-intensity tone than for a low-intensity tone. It follows that the pressure variations produced in the air above the glottis have greater amplitude for the former than for the latter. A third type of variation also is possible. The particular form of the opening-closing motion may be altered in ways that change the complex pattern of the pressure variations produced in the air above the larynx. In this manner the spectrum of the laryngeal tone—hence, its tone quality—can be modified.

To summarize briefly, the vocal folds, as a result of their own elastic closure and the pressure furnished from the breathing mechanism, execute a vibratory opening-closing movement which produces a tone. As a consequence of internal adjustments in the larynx and in the air pressure in the trachea, this tone can be changed so as to raise or lower its pitch, to increase or decrease its loudness, and to modify its tone quality.

The resonating system The third part of the sound-producing system diagrammed in Figure 7, the resonant transmission system, has its counterpart in the throat and the oral and nasal passages of the human vocal mechanism.[11] In the previous discussion of the system shown in Figure 7, we considered the influence of this resonant transmission system on the spectral composition of the tone which finally issues from the mouth of the system. In a similar way, the resonant transmission system of the human vocal mechanism is able to modify the spectral composition of the tone which is generated by the vocal folds.

The human vocal mechanism is somewhat more complicated than the artificial system of Figure 7, of course, and it is capable of even more variations. Hence, the possibilities for varying the spectral composition of the tone, and thus the tone quality, are even greater. The tongue is an extremely mobile organ and can be moved and shaped in many ways. It can be raised or flattened to change the cross-sectional area of the oral tract. It can be humped toward the roof of the mouth or retracted toward the back wall of the throat to produce a constriction separating the

[11] For simplicity, no tube or cavity corresponding to the nasal passages is included in the diagram in Figure 7.

complete vocal tract into two or more divisions having a variety of lengths and cross sections. The throat tube, or pharynx, is likewise a muscular structure and is capable of modification in cross section. The jaw and lip movements can, of course, vary the mouth opening. Each of these possible variations produces a characteristic change in the resonance characteristics of the vocal tract, and hence, a distinctive kind of modification of the spectral composition of the vocal tone.

A wide variation in vocal tone qualities is possible. The nasal cavities are not very modifiable as to size and shape but they can be coupled into the vocal tract system, or decoupled (shut off) from it, by the action of the soft palate in conjunction with the movements of the walls of the throat. Figure 8 shows how this takes place. The back part of the roof of the mouth, called the "soft palate," is muscular and capable of movement. It can either hang down in a relaxed position as represented by the solid-line portion of Figure 8, or it can be raised and retracted in the position shown by the dotted line. In the latter position the walls of the pharynx tend to move in to meet it and produce a closure which seals off the nasal cavity from the throat and oral passages. It is thus apparent that the coupling between the nasal cavity and the rest of the vocal tract is quite variable. This variation introduces still further possibilities of variation in the resonance characteristics of the vocal tract.

It is apparent from the preceding discussion that voice production is a function of all three divisions of the vocal mechanism that have been described. The breathing mechanism furnishes the energy in the form of air pressure below the vocal folds. The vocal folds vibrate in a manner which produces a modulation of this breath pressure so that a tone is generated. The possible variations in the frequency and manner of vocal-fold vibration determine the pitch, loudness, and, to some extent, the quality variations of the vocal tones. The resonant transmission system, consisting of the throat and oral and nasal passages through which this tone is transmitted to the surrounding air, also produces modifications of the vocal-fold tone which are reflected in additional variations of tone quality. This, in brief summary, is how normal voice is produced. The important disorders of voice are to be viewed and understood against a background of essential

knowledge, such as this, about the normal functioning of the vocal mechanism.

Incidence of voice disorders Disorders of voice occur less commonly than the disorders of articulation considered in the last chapter. This is particularly true among young children. Nevertheless, voice disorders do occur with some frequency at all ages. Although by far the larger number of school age children have reasonably adequate voices, a few do not. Some of these latter have organic conditions which interfere with good voice production. For the rest, the structure of the vocal mechanism seems to be all right but for one reason or another it fails to function adequately. Estimates vary, but probably from 1 to 2 percent of school children present significant voice problems.

WHAT IS A VOICE DISORDER?

Before considering what constitutes a voice disorder it is necessary to come to some agreement concerning what constitutes adequate voice. We all know that voices vary widely in pitch, in quality, and even in loudness. We know that the voices of our friends, most of whom, at least, would be considered to have normal voices, differ considerably in these respects. We know that some voices are pleasing, and we like to hear them. Others are not so melodious, and yet we would scarcely call them defective. Apparently any definition of normal voice must allow for considerable latitude. In general, however, we may set down the following requirements for an adequate voice:

1. *The voice must be appropriately loud.* The voice must not be so weak that it cannot be heard under ordinary speaking conditions, nor should it be so loud that it calls undesirable attention to itself.

2. *Pitch level must be adequate.* Pitch level must, of course, be considered in terms of the age and sex of the individual. Men and women differ systematically in vocal pitch level, and children differ from adults.

3. *Voice quality must be reasonably pleasant.* This criterion is essentially a negative one implying the absence of such unpleasant

qualities as hoarseness, breathiness, harshness, and excessive nasal quality.

4. *Flexibility must be adequate.* Flexibility involves both pitch and loudness. An adequate voice must have sufficient flexibility to express variations in stress, emphasis, and meaning. A voice which has good flexibility is expressive. Flexibility of pitch and flexibility of loudness are not inseparable, but they tend to vary together to a considerable extent.

Classification of voice disorders The foregoing requirements for adequate voice imply a possible classification of voice disorders. In this chapter, therefore, we shall classify disorders of voice as *disorders of pitch, disorders of loudness* (or intensity), *disorders of quality,* and *disorders of flexibility.*

DISORDERS OF PITCH. By pitch level of the voice we mean the general highness or lowness of the voice with respect to the musical scale. Some individuals regularly employ pitch levels which are unusual or inappropriate to their age and sex. The 18-year-old who still talks in the high-pitched voice he used as a preadolescent boy, the young woman whose extremely low-pitched and rather gruff tones almost suggest the voice of a man, and the woman whose high-pitched, shrill voice stands out in unpleasing contrast to the other voices in the room, are all examples of persons with pitch disorders.

A person with a disorder of pitch, then, is one who regularly talks with a pitch level which is too high or too low. Constant use of such a pitch level calls unwelcome attention to itself. But there is another consideration that is almost equally important. Such a disagreeable pitch level is often badly suited to the person's vocal mechanism. In fact, if the pitch level regularly employed is really inappropriate, the vocal mechanism may not be able to function efficiently in producing adequate loudness or pleasing voice quality. A pitch level that is too low may significantly limit the use of the pitch inflections that help to make a voice expressive. Continuous talking at an inappropriate pitch level may even be accompanied by unusual strain and fatigue. The result is that pitch disorders may be causally related to other types of voice disorders.

DISORDERS OF LOUDNESS. Most voices affected by a disorder of

loudness are those which are deficient in loudness. We have difficulty hearing them in many ordinary speaking situations. The sound produced lacks adequate intensity. We often say that such voices do not "carry well." The most extreme case of deficiency in loudness is that of the individual who can produce no voice at all. Temporary loss of voice resulting from acute laryngitis is something that we all have known and may perhaps have experienced. Certain kinds of pathological conditions affecting the larynx can result in a more or less permanent loss of voice. In addition, there are persons who are unable to produce voice as a consequence of profound emotional or personality disturbances. These extreme cases are, generally speaking, subjects for medical or psychiatric treatment. They occur relatively infrequently, especially among children, and the classroom teacher will rarely, if ever, have such a case among her pupils.

It can happen, also, that voices are generally too loud. However, most cases of excessive loudness are caused by deficiencies in hearing. These will be considered in Chapter Eight in which the special speech problems of hard-of-hearing children are discussed.

Somewhat rarer are cases of uncontrollable loudness. One young man known to the writer had such difficulty in controlling the loudness in his voice that he would very suddenly find himself shouting, seemingly without any conscious volition. These cases, like those of complete voicelessness, occur infrequently, and the classroom teacher hardly needs to concern herself about them. Her principal concern with loudness disorders will be with students whose voices are just not loud enough to be easily understood.

DISORDERS OF VOICE QUALITY. The most frequently occurring voice disorders are those of voice quality. One of the troublesome things about voice qualities is that they tend to be difficult to describe and classify. There are so many—everyone's appears unique. Also, there has never been adequate agreement concerning the adjectives which should be used to describe particular sorts of voice qualities. Fortunately, in describing *disorders* of voice quality, we can get along with a fairly small number of these terms without sacrificing any important distinctions Only four terms will be used, therefore, and these will be defined rather carefully so that we can know what is meant by each of them:

1. *Nasal voice quality* is produced when the resonance characteristics of the vocal tract are modified by coupling the nasal cavities into the vocal system during the production of speech sounds which normally are essentially nonnasal, that is, all sounds except *m, n,* and *ng*. For these three, of course, the sound must be transmitted through the nose. If, for any reason, the soft palate and walls of the throat do not perform their usual function of shutting off the upper part of the throat and nasal cavities during the production of nonnasal sounds, the voice may be excessively nasal in quality. It sounds to us as though the individual were talking through his nose, and he literally is.

2. *Breathy voice quality* is heard in a voice which seems to have a whisper effect added to the usual vocal tone. It reminds one of a stage whisper. It results from the fact that the vocal folds are not brought together closely enough during the production of the voice tone. As a consequence, a considerable amount of air rushes out through the larynx without being modulated by the vibrating vocal folds. This turbulent rush of air produces friction noises, not unlike whisper noises, which are superimposed upon the tone resulting from the vibrations of the vocal folds.

3. *Hoarse voice quality* can be heard as a temporary condition in a person who has a bad cold which affects the larynx. We sometimes use the term "husky" to describe the way it sounds. Sometimes, a temporary hoarseness may be caused by vocal abuse as, for example, too much shouting at a football game. Such hoarseness results from a temporary condition of inflammation affecting the larynx and vocal folds. More permanent pathological conditions of the vocal folds can produce a permanent condition of hoarse voice. It has been found also that a hoarse voice can result from habitual use of a pitch level unsuited to the vocal mechanism, particularly a pitch level too low for the individual.

4. *Harsh voice quality* has an unpleasant, rough, rasping sound. It is often heard in people for whom voice production seems to be a considerable effort or strain. The particular way that a harsh voice sounds to us may vary somewhat with the pitch of the tone. The term "strident" is sometimes used to describe harsh tones of high pitch. Harsh voice is generally considered to be associated with excessive strain and effort in producing voice, as a result of which there is too much muscular tension in the throat and

larynx. That there is such excessive tension during voice production in many instances of harsh voice has been verified clinically by the fact that these persons sometimes report fatigue if they try to talk for any substantial length of time.

Some writers use a considerable number of terms, in addition to those given above, to designate what they regard as voice quality disorders. Most of these can, however, be included within the classifications given here. Those which cannot will usually be found to refer to some other aspect of voice, not voice quality at all. One such term is "shrill," which is usually used to indicate a very loud high-pitched voice. Shrillness is not a matter of voice quality, since the same voice at normal pitch and loudness levels may be found to have entirely acceptable voice quality. Such distinctions may seem fussy and, indeed, in ordinary casual conversation they probably would not matter. But in the diagnosis of voice disorders, such loose use of terms tends to make for loose thinking and may lead to erroneous conclusions.

DISORDERS OF FLEXIBILITY. Voices said to have a disorder of flexibility may be adequate insofar as general pitch level, general loudness, and voice quality are concerned, but inadequate because they are deficient in expressiveness to a rather extreme degree. These voices are monotonous; that is, there is very little variation in either pitch or loudness. Pitch monotony and loudness monotony could conceivably occur independently, but the two are so strongly interrelated that they usually do go together. Often this extreme lack of expressiveness is accompanied by a mumbling, indistinct articulation. In such cases, the picture is one of general inexpressiveness—with respect to both voice and articulation. The person seems to lack any real desire to communicate; he seems to mumble to himself without concern as to whether anyone can understand him.

A certain amount of lack of expressiveness is probably a fairly normal matter in untrained children's voices, especially in situations in which they feel self-conscious. But normal youngsters lose their reticence, and with it their lack of vocal expressiveness, in most situations in which they feel any real spontaneity (as when relating an interesting experience).

The individuals whose voice problems we are concerned with have so much reticence in all speaking situations that their voices

almost never are expressively "alive." One such case in the author's experience was that of a university freshman who was referred to the speech clinic by the instructor of his speech class. His speech and voice fitted almost exactly the description given above, that is, it was extremely monotonous and inexpressive in both loudness and pitch. There was almost no pitch inflection and little emphasis to reinforce the meaning of what he had to say. His articulation was mumbled and indistinct. Investigation revealed that this was true of his typical speech in all situations. This young man had made an outstanding high school record and had scored very near the top of the university freshman placement examinations. His ambition was to study medicine. It is not hard to foresee the handicap his speech would represent in such a program.

It should be mentioned, too, that his general behavior was excessively withdrawn. According to his own statement he had few, if any, friends. He seemed to have none of the normal social interests that one would expect in a young man of his age. These facts of personal adjustment—or lack of it—help considerably to explain the associated voice problem.

CAUSES OF VOICE DISORDERS

Any complete account of the causes of voice disorders would go beyond the scope of this book. Inadequate voices may result from numerous organic abnormalities which can affect the various parts of the vocal mechanism. Many of these organic conditions are relatively rare. Quite a number are almost entirely confined to adult age levels and hence are not of important concern to the classroom teacher. The discussion in this section will be limited to those which are more common among school age children.

Organic causes Pathological conditions of the larynx which affect voice in any sort of permanent manner are sufficiently rare, especially among children, that the classroom teacher will seldom have a child with this type of difficulty in her classes. It should be understood, however, that there are a number of pathological conditions of the larynx which may affect voice. In a few such

cases the voice symptom may be the first indication that there is anything fundamentally wrong. The most common, and often the earliest, symptom of a laryngeal pathology is severe chronic hoarseness. If by rare chance, therefore, the classroom teacher should have a pupil with severe chronic hoarseness, it would be well to have the child referred to a physician for medical attention. A further word should be said concerning chronic hoarseness. Because it can be the first symptom of a diseased condition of the larynx, no voice retraining should be undertaken until the child has been seen by a physician. If there is a diseased condition, voice retraining might aggravate it and do positive harm. No voice work should be begun, therefore, until assurance has been given by the physician that no harm is likely to result.

Organic abnormalities of the oral cavity are more likely to have an adverse effect upon articulation than upon voice. Cleft palate, one special case which affects the voice very markedly, is of sufficient importance to merit special attention by itself; it is considered in Chapter Seven.

Perhaps the most commonly occurring voice disorders due to organic pathology which the classroom teacher will find among her pupils is that resulting from enlarged adenoids. The child with severely enlarged adenoids has a great deal of difficulty breathing through his nose because the upper part of his throat tube (pharynx) and the openings at the rear of the nasal cavities, which connect them to the pharynx, are obstructed by the enlarged mass of adenoid tissue in the upper part of the pharynx, just behind the nasal cavities. The condition has consequences which affect speech. First, since the passageway into the nasal cavities is obstructed, the child with enlarged adenoids has difficulty producing speech sounds which require nasal resonance; that is, he cannot produce the sounds *m, n,* and *ng* adequately. If the condition is not too severe, these sounds may be only weakened. If the obstruction is complete or nearly so, he may not be able to produce these sounds at all. Instead, he tends to substitute a slightly distorted *b* for *m, d* for *n,* and *g* for *ng.* He talks as though he had a severe head cold.

This type of speech is sometimes referred to as "denasality." Strictly speaking, it is an articulation rather than a voice problem, since the difficulty is primarily one of producing certain speech sounds—the nasal consonants. However, if the adenoids are re-

moved surgically, a definite voice problem may follow. This voice problem results from another important consequence of the fact that the enlarged adenoids obstruct the upper pharynx and nasal cavities. Because of the obstruction, the soft palate and walls of the throat do not function normally to close off the upper part of the pharynx which connects with the nasal cavities. This failure of function may result in part from the fact that the mass of adenoid tissue prevents normal action of the soft palate and pharyngeal walls, and from the fact that the connection with the nasal cavities is already largely obstructed so that the function has become unnecessary. In either case the normal function may be reduced or lost through disease. As for the voice problem following the operation, the important thing to understand is that although the surgery removes the obstructing tissue, it does not restore the function of the soft palate and walls of the pharynx. Therefore, when the obstructing adenoids are removed, the child is left with an open passageway from the lower part of the throat up into the nasal cavities. He can now breathe normally through his nose and produce normal nasal consonant sounds, but he probably will be unable to shut off the upper pharynx and nasal cavities as required for nonnasal consonant and vowel sounds. The voice is likely to sound unpleasantly nasal on all vowels, some more than others, and there is likely to be substantial difficulty in articulating consonant sounds, such as stop-plosives and fricatives, that require appreciable oral pressure for their production. Many children who have had tonsil and adenoid surgery will show some degree of these speech and voice problems. Fortunately, in some instances such problems are transitory, and development or recovery of normal soft palate-pharyngeal function occurs spontaneously. In other cases, however, the abnormal nasalization of speech persists unless special help is provided. For these children the restoration of function and the correction of the voice is a retraining job for the speech clinician.

Functional causes As was seen with articulatory disorders, voice problems cannot always be accounted for in terms of organic causes. For various reasons, the *functioning* of the vocal mechanism may be deficient and a voice problem may exist even though the structure seems to be entirely adequate.

IMITATION. Some voice problems, like some articulatory prob-

lems, are the result of poor habits. Bad voice habits are probably most often due to imitation of poor speech models. With respect to voice, as well as articulation, we "play by ear," and we usually play the tunes that we have heard over and over. The child one or both of whose parents speaks with an extremely nasal voice quality is apt to develop the same fault through imitation. The girl whose mother's voice is typically high pitched and shrill may follow suit, and so on. It may not be out of place to point out that the teacher's voice also is sometimes a model which children imitate—a fact every teacher should duly consider.

PSYCHOLOGICAL FACTORS. Among the more prolific of the causes of voice disorder are psychological disturbances or maladjustments. This statement is especially true if we include adult cases, but it holds also for children. Psychological maladjustments may cover the range from deep-rooted emotional disturbances to the shyness and timidity that seem to be characteristic of a considerable number of children. We have noted the rather common belief that vocal characteristics reveal personality traits. This belief is substantiated by a rather large accumulation of clinical observation and some systematic research investigation. In the case of the university freshman already cited, it was indicated that the lack of flexibility and expressiveness seemed to be related to a general behavior pattern of withdrawal. Cases could be described to illustrate also the relationship of other types of voice problems to personality factors. For example, chronic feelings of anxiety and insecurity may result in excessive bodily tensions which in turn may produce vocal disturbances such as harsh quality or high pitch. Deficient loudness may come from excessive shyness, and so on. In all of these cases the voice disorder is only one indication of a more general problem. It is often one of the most obvious symptoms and may be of sufficient importance to merit special attention. However, the general emotional or psychological problem is the more basic one and must be resolved in some fashion before any great or lasting improvement in voice can be expected.

ADOLESCENT VOICE CHANGE. A problem of psychological adjustment that is of particular interest to teachers of children at the upper elementary and secondary school levels sometimes occurs in connection with adolescent voice change. As one of the normal

pubescent changes during adolescence the larynx undergoes a very rapid growth. In the adolescent male the length of the vocal folds increases considerably in a rather short period of time. The female larynx also increases in size, but the change is much less marked. As a consequence of this development of the larynx, the phenomenon of adolescent voice change occurs. The pitch of the voice deepens considerably. In males the change in pitch is approximately one whole octave. In females it is much less—from one to two tones.

During the period of this rapid growth and probably during a period of adjustment to the new characteristics of the vocal mechanism, the individual may experience some difficulty in controlling vocal pitch. Boys, because of the greater extent of the change, have more such problems than do girls. The mechanism is no longer adapted to the high pitched voice of childhood, and the individual has not become accustomed to, or learned to control, the lower pitch level of his adult voice. Hence, to a greater or less degree, the voice becomes temporarily a strange and unmanageable instrument. At times, it may take uncontrollable jumps from the childhood level to the adult level and back again —the phenomenon called "voice breaks."[12] It is almost as though the young man could not make up his mind whether to continue talking like a child or to talk with the voice of a man.

In boys, the adolescent voice change occurs most typically between the ages of 14 and 16, though the phase may begin a year or two earlier in the few who are precocious in pubescent development. Girls are usually about two years earlier than boys in adolescent development.

Most boys pass through this stage without much difficulty beyond the amusement their lack of voice control causes among their families and friends. In fact, one investigation of the matter indicates that most boys have very few, if any, real difficulties in making the adjustment.[13] For an occasional boy, however, the experience seems to be almost traumatic. It may be that these

12 Curry reports actual measurements of the fundamental frequency variations in "voice breaks" of two young men who were experiencing extreme problems of pitch control. See E. Thayer Curry, "The Pitch Characteristics of the Adolescent Male Voice," *Speech Monographs* (1940), 7:48–62.

13 Charles P. Pedrey, "A Study of Voice Change in Boys between the Ages of Eleven and Sixteen," *Speech Monographs* (1945), 12:30–36.

boys have more than usual difficulty in learning to control their changed vocal mechanism so that they have more frequent embarrassing voice breaks. Or it may be that the "humorous" jibes of their families and friends are more cruelly barbed; or that they are more sensitive and more easily embarrassed. In any case, some boys do experience more than usual tribulation. Now and then a boy fails to make the adjustment and continues as a young adult to employ the high pitch level of his preadolescent voice.

A university sophomore who had such a problem finally came to the speech clinic for help. Careful examination of his pitch range revealed that he had a normal baritone range; but his habitual speaking range was at least an octave higher, the voice of a boy soprano in a 19-year-old young adult. With just a little practice he found it possible to speak on the lower pitch level, but this low pitched voice sounded so strange to him that a considerable period of "getting used to it" was required before he could bring himself to try it on his friends in everyday talking.

One other point should, perhaps, be mentioned in connection with adolescent voice change. Parents, relatives, or friends sometimes have preconceived notions of the voice range (tenor, baritone, or bass) that they would like to have the young man develop. Unfortunately, the growth processes are little influenced by such wishes. The boy himself, however, may be inclined to be more pliable, and in attempting to comply with the desires of his well-meaning associates or with his own notions of what is manly, he may develop voice habits with respect to pitch level which are somewhat out of line with what nature had intended.

Similarly, girls, as they approach adulthood, may be led to develop habits of pitch usage that are badly suited to their mechanisms. In a study of the vocal pitch characteristics of young adult females, Linke found that a rather surprising number were speaking on pitch levels that were almost at the very bottom of the ranges in which they could produce normal phonation.[14] It is significant that the individuals who used such very low pitch levels were also rated low on over-all vocal performance.

UNSUITABLE PITCH LEVEL. Although habitual use of a pitch

[14] Charles Eugene Linke, "A Study of Pitch Characteristics of Female Voices and Their Relationship to Vocal Effectiveness," unpublished Ph.D. dissertation (University of Iowa, 1953).

level inappropriate to a person's age and sex and unsuited to his vocal mechanism is in itself a voice disorder, it may have more far-reaching effects and actually operate as a cause of other types of voice problems. In one study of a considerable number of speakers with hoarse voices, it was found that a large proportion were employing pitch levels that were too low.[15] Another study showed that long continued use of such improper pitch levels may even produce organic changes of a pathological nature in the larynx.[16] The explanation seems to be that constant and habitual use of a pitch level that is ill-suited to the vocal mechanism tends to place this mechanism, especially the larynx, under a great deal of strain. As a consequence, the voice may be adversely affected. This effect seems to be more often the result of a pitch level that is too low than of one that is too high. This seems reasonable when one becomes aware of how difficult it is to produce very loud tones at the lowest pitches of one's vocal range. If, then, such a low pitch level is habitually employed, it may take considerably more effort and place a good deal of excess strain upon the vocal mechanism to produce voice of even the ordinary loudness required for everyday conversation and communication.[17]

Other studies and clinical observations have indicated a possible relation between such abnormally low pitch levels and both deficient loudness and inadequate flexibility. It appears, therefore, that a pitch level properly adjusted to the capabilities of one's vocal mechanism is not only desirable in itself but also a prerequisite of good voice in general.

POOR BREATHING HABITS. As we have noted previously, the proper way to breathe for good voice production has occupied a rather large place in the literature on voice training, both for speech and singing. A considerable amount of what has been

[15] Arleigh B. Williamson, "Diagnosis and Treatment of Seventy-two Cases of Hoarse Voice," *Quarterly Journal of Speech* (1945), *31*:189–202.

[16] Georgiana Peacher, "Contact Ulcer of the Larynx: III, Etiological Factors; IV, A Clinical Study of Vocal Reeducation," *Journal of Speech Disorders* (1947), *12*:177–190.

[17] For additional discussion on this point see Grant Fairbanks, *Voice and Articulation Drillbook*, 2nd ed. (New York: Harper & Row, 1960). Fairbanks presents an interesting graph showing the probable relationship between pitch range and the intensity range of which the voice is capable. The graph indicates that toward the bottom of the pitch range, the maximum producible intensity may decrease very markedly even for small changes in vocal pitch.

written has been based on opinions that have not been verified by careful observation. Recently, many speech pathologists have come to believe that unless there is a definite pathological condition of the mechanism, the breathing processes that have long been established by "doing what comes naturally" are usually adequate for a good speaking voice. Our previous discussion pointed out that phonation during ordinary speaking places no unusual demands on the breathing mechanism—in terms of either volume of air flow or levels of subglottic pressure. We are inclined to agree with such statements as those quoted below:

> As a general rule, breath control is not an important factor in accounting for significant communication problems unless there is a paresis of the breathing mechanism.[18]
>
> Generally, we do not consider it either advisable or necessary to stress manner of breathing. As a practical matter, we have found that it is usually possible to modify and improve breath use for vocalization without direct attention to the individual's breathing activity.[19]

Van Riper and Irwin discuss the topics of breath control and the role of breathing exercises in the correction of voice disorders at considerable length, reviewing in some detail the various points of view and the relevant research.[20] Their conclusions are fundamentally in agreement with the point of view stated here, that is, that breathing exercises, as such, contribute little to the corrective procedures for voice problems.

Although there seems to be general agreement that breathing habits probably have received an undue amount of attention in the past, most authors do indicate that very shallow breathing may contribute to poor voice production in some cases; such cases are, however, probably quite rare.

TREATMENT OF VOICE DISORDERS

Convincing the person that he has a problem A rather important problem in treatment which frequently arises is that of

[18] Wendell Johnson, Frederic L. Darley, and D. C. Spriestersbach, *Diagnostic Methods in Speech Pathology* (New York: Harper & Row, 1963), p. 124.

[19] Jon Eisenson and Mardel Ogilvie, *Speech Correction in the Schools*, 2nd ed. (New York: Macmillan, 1963), p. 281.

[20] Charles Gage Van Riper and John V. Irwin, *Voice and Articulation* (Englewood Cliffs, N.J.: Prentice-Hall, 1958), pp. 288–294 and 348–353.

convincing the person that he really has a voice problem that he needs to do something about. This sometimes presents itself with respect to the articulatory disorders discussed in the last chapter, too, but less frequently. A person is likely to be conscious of faulty articulation, but he may not be aware of a nasal voice or a high pitch level and their unpleasant effects on his listeners. If the speech clinician has access to recording equipment, so that the pupil can listen to a recording to get a more accurate notion of how his voice sounds to others, this problem frequently can be solved rather simply.

Without some means of enabling the pupil to "hear himself as others hear him," the problem of motivating him to attempt correction may not be so easy. Right here the classroom teacher can be of substantial assistance. Since she is better acquainted with the pupil and is more likely to have his confidence than is a comparative stranger she is in a strategic position to be persuasive. Moreover, she may be able to provide specific motivation in the way of rewards for honest effort—such as an opportunity to have a place on a program or a role in a dramatic skit which is being planned—if the pupil will try to overcome his voice problem. Care should be taken not to place too high the goal to be attained before the reward is earned—a failure in spite of hard work should be avoided.

Perhaps this is a good place for another word of caution. The diagnosis of a disorder of any kind should not be made unless one is reasonably sure that the diagnosis fits. This is just as true of voice disorders as it is of any other kind. One's ears should not be "too long." And it is very easy to be hypercritical of voice. Personal preferences vary. The reader is reminded that in our definition of normal voice, wide latitude was allowed for variation within what we may think of as "the normal range." A disorder of voice should be a definite departure from these limits.

Goal of corrective work One can state the goal of corrective work very simply. It is to help the pupil achieve as *good general voice production and usage as possible.* This statement seems so obvious that its important meaning may be overlooked. Too often the tendency is to classify a voice problem as one of nasal voice or high pitch, according to its most predominant single charac-

teristic. Once the voice has been so classified, all other aspects of good voice usage are forgotten.

To the ordinary listener, however, the important thing is the *over-all impression* that is created by the voice. He is seldom analytical concerning the particular aspect of voice that he finds pleasant or unpleasant. One seldom finds an individual who presents just a pitch problem, or just a voice quality problem, or just a loudness problem, and so on. In the greater share of voice cases it will be true that, although one such problem is most prominent, the voice will have deficiencies in other respects, also. One does not, therefore, solve the problem only by working on the single most prominent feature. Rather, *a general program of voice retraining* is required which will give a proper place to all aspects of good voice production. Furthermore, it sometimes happens that the single most prominent faulty feature of the voice is remediable only within limits. If, in such a case, we stop work when these limits have been reached without taking steps to insure that the voice has been made as adequate as possible in all other respects, we have not done all that we can and should do to help the person. In other words, all aspects of voice production and usage should be regarded as alterable features of the person's vocal condition. To the extent that there is less than complete adequacy with respect to any such alterable feature, the problem is increased. We must, therefore, concern ourselves not only with the single most prominent feature but also with any alterable feature which may be contributing to the voice condition—considered as a whole.

The statement in the preceding paragraph should not be interpreted as discounting the importance of making a careful analytic evaluation of each individual voice problem. Neither do we mean to convey the impression that the same program of voice retraining will fit all cases. What is meant is that the analysis of the problem should not be so narrowly focused on one or two prominent aspects that other significant features may be overlooked. While the program of retraining or management should be developed for each individual to meet his greater needs, as disclosed by the diagnostic analysis, it should be comprehensive in the sense that it does not neglect the lesser needs disclosed by the analysis.

An illustration may help. Martha was a college student whose most prominent vocal fault was a hoarse quality. So far as could be determined by a physician there was no organic pathology of the larynx, so the difficulty was classified as functional hoarseness. Analysis showed that her speaking pitch level was very low relative to the range of pitches that she could produce. Her voice also was deficient in both pitch and loudness flexibility and was somewhat weak. In spite of rather intensive and prolonged work, she was never able to achieve voice quality completely free from hoarseness. If the corrective work had gone no further, she would really have been helped very little. But while she had been working on her voice quality, training had been given to help her raise her habitual speaking pitch level and to improve the flexibility and expressiveness of her voice; she had learned to increase her general loudness so that she was much easier to hear and understand. Hence, when she was finally dismissed from the speech clinic, she had improved in several respects. Her voice was a much more effective instrument for communication than it formerly had been. The voice quality still left something to be desired, but she had learned to adjust to that, and she could and did talk with animation and expressiveness, at a loudness level that made her speech easily apprehended by her listeners.

General voice retraining program What has just been said implies that certain voice improvement procedures will be rather frequently employed with many, if not most, cases. Because the aspects of voice production with which they are concerned are so basic to effective voice usage, and because voices which are deficient in some respect are usually less effective than they should be in one or more of these basic features, these procedures will often be included in the comprehensive program of retraining. Let us consider individually, therefore, some of the aspects of the comprehensive program.

ADEQUATE PITCH LEVEL. With voice problems properly classified as pitch disorders, procedures for teaching the individual to employ a more adequate pitch level are usually the first order of business. With many other types of voice problems, however, pitch level may need attention. A pitch level that is not so grossly inappropriate that it constitutes the most noticeable defective

feature of the voice may, nevertheless, if it is not well-suited to the individual, contribute to other types of voice problems such as disorders of voice quality and disorders of flexibility.

A few words need to be said about what we mean by pitch level. Obviously, no one, not even the most monotonous speaker, talks on one pitch level. Our voices vary upward and downward in pitch as we talk with inflectional and intonational patterns that contribute to the expression of our ideas, help to convey information about our feelings, and otherwise communicate to those around us. We can, in a very meaningful way, think of all the various pitches used in any given amount of speaking as constituting a distribution in the statistical sense. As the reader undoubtedly knows, there are several ways of expressing the central tendency of any such distribution: the arithmetic mean, the median, and the mode.

What we mean by a person's pitch level is the central tendency of the distribution of pitch variations that occur as he speaks. If he raises his voice he may raise the general pitch range over which his voice varies, and the distribution and central tendency will be shifted upward by a corresponding amount. The particular measure of central tendency is probably not crucial to the idea of pitch level but since the mode of a distribution of pitches would indicate the most frequently used pitch level, such a measure would seem to be appropriate as representing that pitch to which the voice tends to return again and again as one talks.

NATURAL PITCH LEVEL. There is good reason to believe that for every person's vocal mechanism there is a range of pitch within which he is able to produce voice most efficiently and effectively. Some men have vocal mechanisms suited to a tenor range; some are baritones; some have bass voices. Some women are natural altos, others sopranos. There is considerable experience to indicate that although a person's natural range can be extended somewhat by intensive vocal training, particularly in the upper tonal register, the basic range of his voice is not greatly affected. These facts are the basis for the very useful concept of *natural pitch level.* In the context of the speaking voice, the natural pitch level, determined by the fundamental characteristics of one's laryngeal mechanism, refers to the central tendency of the distribution of pitches used when speaking in a range where one's voice functions

most efficiently and effectively. Habitually speaking so that the central tendency of one's pitch variations corresponds reasonably well to this natural pitch level is what we mean by having an adequate pitch level for speech. Because habitual use of a pitch level that is a reasonable approximation to the natural level is important to effective voice production—related to such other attributes of voice as voice quality, the intensity range that can be easily produced, and flexibility of pitch usage—we find that nearly always it will be appropriate to give special attention to the adequacy of the person's pitch level by this criterion of natural level. The problem is to determine what level is natural for him, then to help him make the use of it habitual, if he is not already doing so.

A number of procedures have been suggested for determining natural pitch level. To the writers it seems that the best of these involve a careful determination of the total range of pitches the individual can produce and of the pitch level most suitable for his voice in terms of that range. Such procedures have a definite rationale, since the best general pitch level for an individual's voice must almost certainly be some function of his pitch range. His best general pitch level must lie somewhere in the midpart of his easily producible pitch range since it must allow for pitch inflections both above and below this average level. Furthermore, the general procedure is practical. Except for individuals who have so little pitch sense that they cannot sing a scale, the total pitch range may be reliably determined by anyone who has a reasonably good ear for pitch and has access to a piano. A complete description of the recommended procedure for determining the total pitch range and locating the natural pitch level within this range is given in Appendix VI.

GOOD BREATHING HABITS. It has already been stated that most persons develop adequate speech breathing habits without any special training. Writers are therefore now less inclined to believe that this is a matter requiring the special attention that would be indicated by statements current in the literature of some years ago. As previously mentioned, a number of recent textbooks seem in general agreement here. In keeping with this point of view, we do not advocate any special exercises for teaching deep breathing or developing any special method of breathing. The unusual case

of excessively shallow breathing can hardly be missed by any close observer. There will be an obvious tendency to speak in very short phrases or with unusual effort and strain if phonation is sustained for more than a very short time. Even for such an individual, the best corrective measures probably do not involve breathing exercises in the usual sense. Instead, these measures should concentrate on practice to increase the time that he can continue phonating or talking without stopping to inhale, and should emphasize easy, relatively effortless control of phonation. Most of this can be carried on in conjunction with, or as a part of, other corrective drills and exercises that will be part of the retraining program.

RELAXED VOICE PRODUCTION. There is ample evidence from the experiences of voice teachers (for both singing and speech) that good voice is produced without excessive muscular tensions in the speech mechanism and its associated structures. It is generally recognized, in addition, that certain voice disorders, especially harsh voice quality, may be caused by excessive tensions in the muscles of the larynx and throat. In producing good voice one should not be aware of special effort and strain. Pronounced vocal fatigue as a typical experience, which it seems to be in some cases, indicates that something is definitely wrong, either in the vocal mechanism itself or in the way that the vocal mechanism is being used.

This matter is considered of such importance by some authorities and teachers that they recommend spending some time on practicing easy, relaxed voice production with all speakers. The real goal of such practice is optimum muscle tonus. Good voice production is easy and relaxed in the same way that a good golf swing is easy and relaxed. Whether or not time should be spent on practice to achieve this goal with all cases is a matter on which there is some room for difference of opinion. The writers lean to the view that if the person shows no evidence of excessive effort and strain for voice production, if his voice shows no traces of harshness, or breathiness, or hoarseness, and if he seems to be able to produce an ample amount of loudness rather easily, then such practice has little to recommend it. But with many voice disorders these conditions will not be fulfilled, so practice to achieve easy, effortless tone production will be needed.

ADEQUATE JAW AND LIP ACTIVITY. Another consideration, to some extent related to what we have been talking about, is that of avoiding unnecessary constriction of the throat and mouth passageways during voice production. Singing teachers talk about developing an "open throat" and "open tones." So far as the throat is concerned, the desired result is obtained if the relaxed, easy voice production discussed in the previous paragraph is achieved. However, an open mouth passageway for the sound is not necessarily assured by such practice. Some persons, a large proportion of those with voice problems, habitually speak with narrow mouth openings and inactive jaws and lips. With respect to articulation the possible effects are relatively obvious. It may not be so obvious, however, that such restriction of jaw movement and mouth opening also has a bad effect on voice. It may be the most important single factor in some cases of functional nasal voice quality. In fact, Williamson found that all but a few of his nasal voice subjects achieved good voice quality and eliminated excessive nasal resonance through training which emphasized wider mouth and jaw openings and greater jaw and lip activity.[21]

The reason for this is fairly easy to understand. If the oral channel for the sound is constricted by a close jaw position or a high tongue position, or both, the transmission of sound energy out through the mouth will tend to be impeded. The result is that a greater percentage of the total sound energy from the vocal folds will tend to be transmitted into the nasal passages, especially if the closure between the soft palate and pharyngeal walls is incomplete. The effect of nasal resonance on the sound produced by the voice is thus increased. In addition, an open oral passageway for the sound is important for adequate loudness of voice and good voice production in general. A simple physical principle indicates that the intensity of sound radiated from the mouth will be proportional to the size of the mouth opening. Hence, as a part of the general program of treatment which can be used to good advantage with most cases of voice disorder, attention is given to developing a normal amount of activity of the jaw and lips and to eradicating any existing habits of speaking with a very narrow mouth opening.

21 Williamson, "Diagnosis and Treatment of Eighty-four Cases of Nasality," *Quarterly Journal of Speech* (1944), 30:471–479.

IMPROVED FLEXIBILITY AND EXPRESSIVENESS. Training to improve flexibility and expressiveness of voice is the most important single goal for those whose disorder is mainly one of flexibility. What we are talking about here, therefore, is the very heart of the retraining program for such cases. However, most poor voices, whether they be poor in quality, loudness, or pitch, are also somewhat monotonous and inexpressive. It follows that training to overcome this deficiency is an important part of the *general program* of vocal retraining that is being discussed here.

An extended discussion of techniques for such retraining would be out of place in this book. Only certain basic principles will be mentioned. The chief requisites of flexibility and expressiveness of voice are something to say and a desire to communicate. Another is that the individual feel sufficiently comfortable and at ease in the speaking situation to allow his voice to express what he wants to say with forcefulness and meaning. These are psychological factors, of course, and, as we have seen, the individual whose voice is extremely deficient in expressiveness usually has important difficulties in adjustment to all kinds of speaking situations. If a deep-seated and serious personality disturbance lies at the root of the difficulty, then the job to be done is beyond the training and knowledge of the speech clinician or the classroom teacher. On the other hand, quite frequently the difficulty is nothing more than a certain fairly common degree of shyness and timidity, and what the individual needs is merely a little special encouragement and some help in developing a normal amount of self-assurance. In a case of this sort, both the speech clinician and the classroom teacher can be of considerable assistance. The important ideas and techniques for helping the child with this sort of problem have been thoroughly covered in Chapter Two.

Further requisites for overcoming a deficiency in flexibility of voice are that the child learn to recognize how inflexible and monotonous his voice patterns are, and that he develop definite auditory impressions of good, expressive voice usage. Finally, he needs practice in developing habits of better expressiveness and in transferring these habits to ordinary speech situations. Oral reading of stories and poetry is frequently used with good results. But the habits must be carried into types of speaking situations other than oral reading, so practice should include the use of dis-

cussions and conversation. And the transition of the habit to other situations in the classroom and outside of it should be emphasized.

This *general program* of voice retraining will be adequate to take care of all but a few of the voice disorders ordinarily encountered in the schoolroom. The procedures will need to be adapted to meet the particular problems of each child. But the adaptation will be mainly a matter of emphasis, and the important factors of pitch level, easy and relaxed tone production, and adequate flexibility will need to be considered for each pupil. Retraining should be planned according to the particular needs of the individual.

There has been little mention in this section of specific exercises and practice materials, but an ample amount of practice materials and suggestions for exercises may be found in other references. The ones listed in the footnote at the bottom of this page are particularly recommended.[22]

Voice retraining techniques The preceding discussion has outlined a general program of voice retraining which, if properly carried out, will meet the needs of most pupils having voice problems. Very little was said about techniques for carrying out this program, however, and it is the purpose of this section to suggest the techniques which may be used. As a matter of fact, they are so similar in many respects to those already described in the chapter on articulatory disorders that little more needs to be added here.

EAR TRAINING. The child with a voice problem needs ear training just as the child with an articulatory deficiency does, and for much the same reasons. He needs to learn to recognize what it is about his voice that needs to be changed. He must build up a strong auditory impression of good pitch, or good voice quality, or adequate loudness or flexibility, so that he knows what he is working for. He needs to be able to discriminate readily between good voice and his particular brand of faulty voice production.

Practice in recognizing and identifying his fault when it is imitated by the clinician will aid in providing such ear training.

22 Van Riper and Irwin, *Voice and Articulation, op. cit.;* and Fairbanks, *Voice and Articulation Drillbook, op. cit.*

Practice in discriminating between good and bad pitch, or quality, as he stimulates him first with one and then the other, will be helpful. Assignments can be given to older pupils to observe the speech of others and to see how many can be found who exhibit faulty vocal habits similar to theirs. As with articulatory errors, names can be given to the faulty habits, such as the "talking through the nose voice," the "rusty hinge voice," the "talking to yourself voice," and so on. Care should be taken, of course, that these names do not carry connotations which will injure the child's sensitive feelings or will increase his timidity or anxiety about his problem. Recording equipment, if available, is of particular value in this ear training practice.

PRACTICE WITH ISOLATED VOWELS. With some kinds of voice practice designed to initiate a new habit, isolated vowels make better practice material than connected speech. This is particularly true when practice is first begun on a new pitch level, when practice is being given in easy, relaxed vocalization, or when any new voice quality habit is first being taught. In many respects this practice with isolated vowels is similar to the practice with isolated sounds in teaching a new articulatory habit and, as in that use, simplifies the situation in which the new habit is taught.

PITCH LEVEL. In teaching a new pitch level, the clinician can ask the pupil to sing up or down the scale until the desired pitch is reached. The pupil can then be asked to sustain this pitch as he produces the vowel *ah,* then *oh, ee,* and so forth. He should practice this pitch on all vowels at various loudnesses. He should learn what it feels like and definitely fix in his mind the auditory impression it makes. After isolated vowels have been practiced in this way, words can be practiced at the same general level with allowances made for a normal inflection of pitch. Still later, phrases and sentences can be used.

RELAXED VOICE PRODUCTION. In teaching easy relaxed voice production, the clinician will nearly always use isolated vowels at the beginning of the work. The pupil, seated in a relaxed position, is asked to sustain a vowel in a very soft voice. Some clinicians start with a relaxed sigh and only gradually have pupil begin to vocalize the sigh. The loudness is increased little by little until a vowel of normal loudness is being sustained. Various vowels are used—although there is some advantage in starting with a rela-

tively open vowel such as *ah*. The pitch also is varied, but with easy and relaxed voice production maintained at all times. Later, words, phrases, and sentences can be used.

NEW VOICE QUALITY. Teaching a new voice quality involves much the same technique of using isolated sustained vowels. Since the child usually is able to hear and imitate the new quality in isolated vowels more easily than in words or sentences, the new quality will be taught first by using vowels and will be reinforced thoroughly before words and sentences are attempted.

AUDITORY STIMULATION. Voice habits, like articulatory habits, are learned largely through imitation of what the pupil hears. Auditory stimulation is thus the basic technique for teaching a new voice habit just as it is for teaching the correct articulation of a speech sound. The clinician will bombard the pupil's ear with the model that he is to imitate. He will learn correct loudness through imitation, good flexibility and expressiveness through imitation, the correct pitch level through imitation, and so on. In all the voice retraining, as throughout all corrective work in articulation, auditory stimulation is the basic technique used at each stage of training and to supplement any other procedures which may be employed.

NEGATIVE PRACTICE. Once the pupil has acquired the new vocal habit and uses it easily and at will, at least on isolated vowels, negative practice can be very useful. It has the same virtues of weakening the old faulty habit that were discussed in the preceding chapter. In addition, it seems to give the pupil a considerable sense of having control of the situation if he can produce his old faulty habit or the new good habit at will, and can alternate them as he chooses. Valuable reinforcement to ear training also is provided by this kind of practice.

TRANSFER TO ORDINARY SPEECH. The process of transferring the new habit, whether it is one of pitch, voice quality, loudness, or flexibility, to ordinary everyday speaking situations will require the use of the same sort of assignments that were suggested for achieving the transfer of a new articulatory habit to connected speech. Nucleus situations may be employed in a similar manner. The classroom teacher can assist in this stage of the retraining process in much the same way as was indicated in the previous chapter. Goals should be kept limited at first so that the pupil has

the reward of experiencing success. Assignments seeking to eradicate the old habit in all speaking situations can be carried out later.

Special voice retraining techniques The program of retraining and the techniques which have been discussed are the fundamentals for the treatment of voice disorders. Very few remedial cases will not yield to such a program. There are, however, a few types of voice disorders which require more specialized techniques. Those that are likely to be encountered in the classroom will be considered in this section.

AFTER THE REMOVAL OF ADENOIDS. The problem of the child with enlarged adenoids has already been discussed insofar as the organic factors and their relations to speech are concerned. It was pointed out that removal of the adenoids may solve one speech problem (lack of adequate coupling to the nasal cavities so that nasal consonants are deficient) but create the conditions for a different one, since removal of the obstructing adenoid tissue does not restore adequate functioning of the soft-palate, pharyngeal-wall closure. Although this function may be developed spontaneously by some children, others may require special help. The exercises that are needed will concentrate on developing activity of the palate and associated pharyngeal muscles. Since the closure needed for voice quality free of undesirable nasal resonance is required also for articulation of those sounds requiring significant amounts of oral pressure, especially the voiceless fricative consonants (*s, sh, f,* and *th*) and the stop-plosive consonants (*p, b, t, d, k,* and *g*), articulatory drills on these consonants—with special attention to forceful production of these consonants—will call for vigorous activity of the closure. Vigorous exercise and practice on nonsense syllables and words and sentences which combine these consonants with other sounds should help to increase the general activity of the palatal-pharyngeal mechanism; this is assuming, of course, that the mechanism is capable of producing a closure. This type of drill and practice should be combined with other activities for eliminating nasal voice quality. However, if the child cannot produce these sounds, especially the stop-plosives, without a good deal of nasal emission of air, it is probable that the mechanism itself is too deficient for improvement in speech to be accomplished by such procedures. In such instances, the problem is very similar to that of the child with a cleft palate

whose mechanism is not adequate for speech; a similar course of management may be necessary. The problem of cleft palate speech is discussed in Chapter Seven.

OTHER SEVERELY NASAL VOICES. The explanation for marked nasal quality in the speech of a person whose soft palate and pharyngeal structures seem to be intact and capable of normal functioning can be baffling. Individuals having such functional nasal-quality disorders have been subjected to a good deal of study but a completely satisfactory explanation for the problem appears to be elusive. Differences in function seem to be so slight, and perhaps inconsistent, that they are not always readily apparent, even on X-ray motion pictures of the articulatory mechanism. A partial explanation that seems to be supported by a number of studies is that persons with functionally nasal voices tend to speak with narrowed oral channels, which perhaps result from elevated and retracted tongue positions during vowel sounds.[23] Fairbanks states: "Constriction of the oral channel (above or behind the tongue, between teeth or lips, etc.) tends to increase the relative prominence of nasality in the spectrum."[24] To the extent that this explanation is valid, corrective action should emphasize increasing oral activity during articulation, speaking with adequate jaw and mouth opening, and practice on vowel articulation with forward tongue placement. Clinical experience shows that some individuals do respond to measures of this kind.

Another partial explanation for nasal quality is the phenomenon of "assimilated nasality." Cineradiographic studies of soft palate activity show that even among normal speakers the presence of nasal consonants typically affects the activity of the palate during the articulation of adjacent vowels. The soft palate is not elevated and tensed on nasal consonants since the sound must be diverted into the nasal cavities. The pictures show, however, that the opening of the valve formed between the soft palate and the pharyngeal wall (necessary for the nasal consonant) may be anticipated during the preceding vowel, and thus cause the vowel to be

23 See Ernest H. Hixon, "An X-ray Study Comparing Oral and Pharyngeal Structures of Individuals with Nasal Voices and Individuals with Superior Voices," unpublished M.S. thesis (University of Iowa, 1949); Eugene T. McDonald and Herbert Koepp-Baker, "Cleft Palate Speech: An Integration of Research and Clinical Observation," *Journal of Speech and Hearing Disorders* (1951), *16*:9–20; and Williamson, "Diagnosis and Treatment of Eighty-four Cases of Nasality," *op. cit.*

24 *Voice and Articulation Drillbook, op. cit.*, p. 172.

nasalized. The vowel may be said to assimilate nasality from the nasal consonant. A similar effect can be produced on a vowel that follows a nasal consonant if the soft palate fails to be elevated immediately upon termination of the nasal consonant. For normal speakers the effect appears to be greater for vowels preceding nasal consonants.[25] If this assimilation effect should be increased very markedly, possibly due to somewhat sluggish palatal activity, a distinct and unusual nasal quality on the vowels would be expected and may be part of the explanation for functionally nasal voices. A sluggishly acting soft palate may also fail to be elevated sufficiently for other vowels in connected speech thus adding to the general impression of nasal quality. Remedial exercises to increase palatal activity, as suggested for the child whose nasal voice problem follows removal of adenoids, are therefore indicated in functionally nasal voices.

BREATHY VOICE. Breathy voice quality, as previously explained, is a result of excessive escape of air from between the vocal folds during production of voice. Usually it will yield to the general program of retraining discussed above, especially if a faulty pitch level is found to be related to the quality problem, as is often the case. Certain special techniques, however, may be used to good advantage.

Frequently, it is helpful to have the child prolong a vowel sound at a rather loud level. This loud voice will seldom be breathy in quality because the nature of the adjustments required in the larynx makes it difficult to produce a loud voice which is at the same time breathy. If the pupil then gradually reduces the loudness of this tone while trying to keep out breathiness, he may find that a nonbreathy quality can be produced at ordinary loudness. A successful attempt will need to be reinforced immediately, of course, and the pupil should listen to it, try to feel what is happening, and get all possible cues which will enable him to learn to produce this quality at will.

Another device is to have the child practice prolonging a tone as long as he can on one breath, or to practice counting as far as possible on a single breath, or to practice reading as long as possible without taking breath. We do not ordinarily do these things

[25] Kenneth L. Moll, "Velopharyngeal Closure on Vowels," *Journal of Speech and Hearing Research* (1962), 5:30–37.

when we talk, obviously, but forcing the pupil to conserve the breath by these devices will frequently help in obtaining non-breathy voice. Breathy voice is extremely wasteful of the air supply in the lungs. Practice works in the direction of achieving a voice which is less wasteful and, hence, less breathy.

WHAT THE CLASSROOM TEACHER CAN DO

To aid the speech clinician Much of what the classroom teacher can do to aid the speech clinician has already been suggested. Her part in helping the child to realize that he has a voice problem on which he needs to work has been mentioned and needs only to be emphasized here. The importance of this step in the correction process is obvious. Nothing can be accomplished unless the child is motivated to improve. The classroom teacher can be of important assistance in helping to arouse this motivation without creating anxiety. Her part in providing encouragement along the way is no less important.

The assistance that the classroom teacher can provide during the stage when new voice habits are being transferred to connected speech is so similar to the assistance needed in transferring new articulatory habits that no additional discussion is required. Because only brief mention of this function is made, it should not, however, be assumed that it is relatively inconsequential. The speech clinician can teach good habits during the speech correction lessons, but he cannot insure that they are made part and parcel of the child's everyday speech without assistance from the classroom teacher. And all his efforts come to naught unless the everyday speaking of the child is improved.

Because many children with voice problems lack confidence and self-assurance and because these lacks are often basic to their voice problems, the classroom teacher can be of special help in guiding these children to better adjustment to various social and speaking situations. This is not to suggest that she attempt to operate as a clinical psychologist. The things she can do are, in the main, what good teachers usually do. Counteracting shyness and timidity and encouraging confidence and poise are certainly a part of the teacher's everyday job. The only reason for mentioning them here is to emphasize that voice disorders are some-

times important symptoms of such adjustment problems and that the child with a voice problem may need a little special attention in this respect.

When there is no speech clinician Just as the teacher who has a special interest and is willing somehow to "make" the time can help the child with certain types of articulatory problems by undertaking actual corrective work, so she can do much to help children with many sorts of voice disorders, even when there is no speech clinician. Again it should be emphasized that this is not the ideal or even the desirable answer to problems of children with speech handicaps. At best, it is only a partial solution, since there will be disorders with which the classroom teacher is not prepared to deal without considerable additional training. And, of course, she already has a full-time job. But in the absence of the specially trained clinician, the classroom teacher can help bridge the gap for children with voice problems in the same way that she can for children with articulatory disorders.

The information and procedures given in this chapter provide the main tools, though they will need to be supplemented with exercises and assignments from other references and with assignments of the teacher's own devising.

One other tool is needed by the teacher who attempts voice retraining. She should have a voice which is, itself, adequate in all important respects. The retraining process depends so much on imitation, and the auditory stimulation provided by the teacher is so fundamental, that this requirement is a must for any person who wishes to work with voice problems. Most teachers have good voices and so will have no cause for concern. However, each person undertaking work with voice problems should be aware of its importance.

The voice problems with which the classroom teacher without special training can attempt to work will need to be selected only to the extent of avoiding those in which a profound emotional disturbance may be a complicating factor and those that may involve some active organic condition that would be aggravated by vocal practice. In all cases in which the latter situation is suspected, medical consultation should be sought. Happily, however, voice problems with such complications are not common among school age children.

FIVE



STUTTERING

What is stuttering?[1] Most dictionaries define it as speech that is characterized by spasmodic repeating, involuntary stopping and repeating, hesitating and blocking, or hurrying and stumbling, or by some combination of these. For the speech clinician or the classroom teacher—or for any member of the problem that develops around stuttering—this definition is inadequate in two respects. First, it omits mention of the similarities and differences between so-called normal speech and the behavior called stuttering. Second, it makes no reference to that basic concept that we have called *notion of problem* (see Figure 1, Chapter One, and supporting text).

In the present chapter, then, it will be our purpose, first, to develop a more complete working definition of stuttering; next, to discuss some of the questions commonly asked about stuttering; and, finally, to explore those human relationships within the speaking situation that are particularly meaningful to those who seek an understanding of stuttering as a problem. To realize these purposes we shall draw on the impressively extensive re-

[1] In accordance with prevailing custom in the United States, the word "stuttering" is used predominantly and in general preference to "stammering" in this book. The latter term appears to be preferred, however, in England and most other English-speaking parts of the world. It is generally agreed that the two words may be used synonymously.

sources available to us as a result of the research and clinical activities that have spanned the past four decades.

DEFINING STUTTERING

The matter of defining the problem called "stuttering" is not to be dismissed in a paragraph or two. What we are to mean by the problem of stuttering, especially in its early childhood forms, is so fundamental to what we are to say about it and do about it that it will be very much worth our while to take time for an explanation of terms and concepts.

We find we commonly use the word "stuttering" in three main ways (italics ours):

> We use it to refer to *what the speaker does;* we use it as a name for *the category* in which the listener classifies what the speaker does; and we refer by means of it to *the problem* that ensues when listeners classify what a speaker does as stuttering and evaluate it as undesirable, and the speaker senses their evaluations and reacts to them with tension and concern, confirming and intensifying their evaluations, and in the bargain further deepening his own concern—in an ever-outreaching spiral of distress.[2]

We shall see in the text that follows that the first way introduces ambiguity, the second way involves a judgment and an evaluation, while the third is more inclusive and more satisfactory, from the point of view of problem solving, than either of the other two.

Fluency

ADULTS. Although stuttering is commonly defined in dictionaries and textbooks as a disorder in the rhythm or fluency of speech, manifested in repeated sounds, words, or phrases, or in prolonged sounds, pauses, blockages, or hesitancies, this can be only a partial definition, and it is one that turns out to be ambiguous when applied. Among its other shortcomings as a definition, it seems to imply that in normal speech there are no dis-

[2] Wendell Johnson in Johnson, Frederic L. Darley, and D. C. Spriestersbach, *Diagnostic Methods in Speech Pathology* (New York: Harper & Row, 1963), p. 241. See also Frank B. Robinson, *Introduction to Stuttering* (Englewood Cliffs, N.J.: Prentice-Hall, 1964), for a discussion of definitions, research, and theories. He begins his book with this sentence: "Understanding stuttering is a formidable task."

turbances of rhythm or fluency, no repetitions or prolonged sounds or other hesitancies.

The fact is that speech fluency, or disfluency, is a statistical matter. That is, persons who are not regarded by themselves or anyone else as stutterers show a vast range of individual differences with respect to the fluency of their speech. So do persons who are thought of as stutterers. In studies done at the University of Iowa, objective measurements have been made of disfluency in the speech of 200 young adults, most of them college students with the majority enrolled at the University of Iowa.[3] Of these, 100 were male and 100 were female; 50 males and 50 females regarded themselves as stutterers and were so regarded by others; 50 males and 50 females were considered normal speakers. Speech samples were tape-recorded under each of three conditions: (1) Job task: each subject spoke extemporaneously for at least two minutes and not more than three and one-half minutes about a past job or a desired future job; (2) TAT task: each subject responded according to standard instructions to TAT card No. 10;[4] (3) Oral Reading task: each subject read aloud a 300-word passage prepared by Darley.[5]

Disfluencies were classified in eight different categories: interjections of syllables, sounds, words, or phrases; repetitions of parts of words; repetitions of whole words; repetitions of phrases; revisions (changes in wording or grammatical structure of a phrase, or in pronunciation of a word—e.g., "I was—I am going home"); incomplete phrases (e.g., "She was—and after she got there, he came"); broken words (words not completed or broken as in "I was g[pause]oing home"); prolonged sounds or parts of words. The number of instances of each type of disfluency per 100 words was computed for each task for each subject and the total number of instances of all types per 100 words also was determined for each task for each subject.

[3] Johnson, "Measurements of Oral Reading and Speaking Rate and Disfluency of Adult Male and Female Stutterers and Nonstutterers," in *Studies of Speech Disfluency and Rate of Stutterers and Nonstutterers*, monograph 7, *Journal of Speech and Hearing Disorders*, 1961, pp. 1–20.

[4] Henry A. Murray, *Thematic Apperception Test Manual* (Cambridge: Harvard University Press, 1943).

[5] Darley, "A Normative Study of Oral Reading Rate," unpublished M.A. thesis (University of Iowa, 1940). The reading passage is available in published form in Grant Fairbanks, *Voice and Articulation Drillbook* (New York: Harper & Row, 1940), p. 144.

As was expected in view of other research in the area, the stutterers were found to speak and read more slowly and to have more disfluencies in their speech than the nonstutterers. A comparison of the performances of stutterers and nonstutterers revealed a good deal of overlap in both the distribution and the frequency of disfluencies for the two groups. About 20 percent of the stutterers were more fluent than from 30 to 40 percent of the nonstutterers. In 36 of 48 comparisons based on highest number of disfluencies for all speakers, by sex subgroups of stutterers and nonstutterers, the most disfluent nonstutterer was less fluent than more than half of the stutterers. The overlapping is interpreted as meaning that "some speakers who are classified as stutterers are more fluent, at least in certain respects and at certain times, than are some speakers who are regarded as normal speakers."[6]

A particularly striking way to indicate the extent of overlapping or similarity between the groups is to be found in data obtained in a special study made by means of some of the oral reading samples of the male stutterers and nonstutterers obtained during early phases of the study. For each one of the 12 most fluent stutterers during oral reading, it was possible to select a nonstutterer who presented approximately the same total number of disfluencies. The tape-recorded oral reading samples of these 12 stutterers and 12 nonstutterers were presented in random order to a group of 43 speech pathology students, about one-third of whom were speech clinicians with job experience, who were instructed to judge each recording as being that of a stutterer or a nonstutterer. Only seven of the 12 stutterers' samples were so considered by more than 13 of the 43 judges, and no stutterer's recording was so judged by all 43 listeners. Moreover, three of the nonstutterers were considered to be stutterers by more than 13 judges, and only one speech sample was classified as that of a nonstutterer by all 43 judges.

The fact that 43 relatively sophisticated listeners had this much difficulty in trying to tell which of the 24 samples were those of the 12 stutterers indicates that the two groups of speakers were much alike not only with respect to fluency but also with regard to other aspects of their speech. As a matter of fact, it is most thought-provoking that approximately one-fourth of this pre-

[6] Johnson, *ibid.*

sumably representative sampling of a group of stutterers drawn from seven Midwestern colleges should turn out to read orally in such a way that they could be matched for fluency on an objective basis with an equal number of presumably representative nonstutterers of like age. This, in itself, forces attention to the complexity of the problem involved in defining stuttering as a disorder of the rhythm of speech. There is evidently no clear and sharp dividing line between the speech of stutterers and that of nonstutterers, certainly not with respect to fluency. It seems to be the case that speakers are distributed along the various dimensions of speech behavior, including fluency, from one extreme to the other, with the great majority to be found somewhere between the extremes.

If a person is convinced that he stutters, he definitely has a problem even though he may speak quite fluently—and a notable proportion of those who come to speech clinics as stutterers do speak with relatively slight disturbance insofar as fluency is concerned. In drawing due attention to the fact that stuttering is not simply a matter of disfluency we must not, however, overlook the fact that as a group, particularly beyond the early childhood age level, stutterers are definitely more disfluent than are persons who are not regarded by themselves or others as stutterers. Due attention is to be given also to the reported differences in the predominating types of disfluency in the speaking and reading of stutterers and nonstutterers.

CHILDREN. So far, we have discussed speech fluency in college age adults. Fluency norms for children between the ages of 2 and 5 years, inclusive, have been determined in investigations involving nearly 200 youngsters, unselected except for the fact that they were attending the preschools of the University of Iowa's Institute of Child Behavior and Development, known at the time of this research as the Iowa Child Welfare Research Station. Speech samples were obtained during free-play situations by observers who presumably did not disturb the activities of the children in the preschool setting while obtaining the samples. Other samples were obtained by means of a specially constructed test designed to elicit speech in response to pictures, toys, and activities. Repetitions of parts of words (generally syllable and sound repetitions), whole words, and phrases (two or more words)

were noted and tabulated. In this research there was marked agreement among the findings from five different samplings or studies made at different times by different investigators.[7]

In general, counting repetitions of all types during free-play speech, there was an average of 49 instances of part-word, word, and phrase repetition per 1,000 running words. Slightly less than one-fourth of the words figured in some kind of repetition—either a part of the word in each case was repeated, or the word as a whole was repeated, or the word was part of a repeated phrase.

In the speech-test situation there was an average of about 36 instances of repetition per 1,000 words, and approximately 10 percent of the words were involved in repetitions of one sort or another. No child was found who did not repeat at all, and the range, presumably the range for normal speech at this age level, extended up well beyond 100 instances of repetition per 1,000 words for free-play speech and nearly 90 for the speech-test situation. The average amount of repeating declined somewhat with age, within the age limits covered in the various samplings; in the Davis sample of 62 children, aged 2, 3, and 4 years, in the free-play situation, the average values decreased from 54 instances of repetition per 1,000 words at age 2 to 40 instances at age 4; in the Hughes sample of 39 children, aged 2 and 4, in the test situation, the average number of repetitions per 1,000 words at age 2 was 41 and at age 4 it was 27.

Repetition is a normal characteristic of speech from the very beginning, of course. The birth cry itself typically is repeated over and over again. Professor Orvis C. Irwin and his students at the Iowa Child Welfare Research Station have found in their extensive studies of the vocalizing and speech sound production of

[7] For a detailed account of this research see Margaret E. Branscom, Jeannette Hughes, and Eloise Tupper Oxtoby, "Studies of Nonfluency in the Speech of Preschool Children," in Johnson and Ralph Leutenegger, eds., *Stuttering in Children and Adults: Thirty Years of Research at the University of Iowa* (Minneapolis: University of Minnesota Press, 1955), chap. 5. See also Dorothy M. Davis, "The Relation of Repetitions in the Speech of Young Children to Certain Measures of Language Maturity and Situational Factors," *Journal of Speech Disorders* (1939), 4:303–318, and (1940), 5:235–246. For discussion of the theoretical and practical implications of the data from these studies see *Stuttering in Children and Adults: Thirty Years of Research at the University of Iowa, op. cit.*, chaps. 1 and 2; and Lee Edward Travis, ed., *Handbook of Speech Pathology* (New York: Appleton-Century-Crofts, 1957), chap. 28.

infants that roughly one-third to nearly two-thirds (depending on mode of analysis) of the sound elements produced during the first year of life are repeated. During the first two years of life, they have found that from one-fourth to one-third of the vocalized breath exhalations contain repetitions of sounds or sound patterns.[8] In other words, repetitions are common in vocalizing long before the child uses conventional language.

It has, so far, proved essentially impossible to obtain a set of speech samples from young stutterers at the time of so-called onset of stuttering—that is, on the very day of onset or within a few days, or even a few weeks, after the alleged onset. It would be very desirable also, but has not yet proved to be possible, to obtain speech samples from such children a day or so, or a few weeks, before they are first judged to be stuttering. We know from intensive studies of the conditions under which stuttering arises and the nature of it at time of onset, that once a child has come to be regarded or diagnosed as a stutterer, his speech behavior tends to change, rather slowly in some cases and very quickly in others, so that unless a speech recording is made promptly when someone is just beginning to feel that a specific child is stuttering, it cannot provide a valid sample of the child's speech at time of onset. Intensive interviewing of parents relatively soon after alleged date of onset of stuttering in their children indicates that, generally speaking, the parents are the first to make the judgment or diagnosis of stuttering in nearly all cases, and that the speech phenomena they take to be stuttering are for the most part the simple, essentially effortless repetitions of syllables, words, and phrases of the sort that, as we have seen, are to be observed with considerable frequency in the speech of normal children.

Supportive data are to be found in the results of several investigations of the onset and early development of stuttering that have spanned more than two decades and that have been published as Studies I, II, and III in the so-called "onset" series at

[8] Relevant data are included in a dissertation by one of Professor Irwin's students, Han Piao Chen, "Speech Development During the First Year of Life, a Quantitative Study," unpublished Ph.D. dissertation (University of Iowa, 1946). The further study of these data and additional data covering the second year of life, made by Harris Winitz under Professor Irwin's direction, is reported by Winitz, "Repetitions in the Vocalizations and Speech of Children in the First Two Years of Life," in *Studies in Speech Disfluency and Rate of Stutterers and Nonstutterers, op. cit.*, pp. 55–62.

the University of Iowa.[9] In Study I, by Johnson, the subjects were 46 children, aged 2 to 9 at the time of the study, with a median age of 4; all were regarded as stutterers. For all 46, repetitions were the main type of speech behavior that the parents had originally identified as stuttering. For 42 of the 46 it was the only speech characteristic that moved the parents to make a judgment of stuttering. In Study II, by Darley, the subjects were 50 so-called stuttering children and their parents and 50 children regarded as nonstutterers and their parents. The children's mean age was about 9 at the time of the study. Parents of 41 of the 50 stuttering children reported that the first signs of what they took to be stuttering were solely repetitions of sounds, syllables, words, or phrases, and that in four other cases the only other reactions reported were "hesitations" or prolonged sounds. For 44 of the 50 children at least one parent reported that there was no tensing associated with what was judged to be the beginning of stuttering. Parents of six children reported there was some tensing but only two of these six parent pairs could agree about the severity of that tensing.

In Study III the subjects were 300 children and their parents; the children had a mean age of about 5 at the time of the interview. Parents of 150 of these children had judged them as stutterers. Parents of the other 150 regarded their children as normal speakers. Repetitions again were the speech characteristic reported by the great majority (85 to 90 percent) as the basis for the judgment of stuttering. And three-quarters of these parents did not indicate that any other speech characteristic entered into that judgment. Data indicated that all the children were speaking with about the same kinds and numbers of disfluencies at the time that the parents of the so-called stutterers judged that their children were stuttering but the parents of the nonstuttering children judged that their children were speaking normally for their age and level of development.

On the basis of the total findings, obtained through an 818-item interview with each parent individually, the children of the two groups appeared to be more alike than different. As to the matter of tensing, the findings suggested that whatever it was in

[9] Johnson and Associates, *The Onset of Stuttering* (Minneapolis: University of Minnesota Press, 1959).

the children's speech that the one group's parents had judged to be stuttering, that "something" involved essentially no more and no less tension or emotion than did the "normal" disfluencies that were noted by the parents of the nonstutterers.

The basic facts appear to be fairly clear in this connection. So far as the type of disfluency is concerned, one can hardly be sure from the known data that there is *at the moment of original judgment or diagnosis* any considerable difference—and there may be little or no difference—between the types of disfluency in the speech of children who are judged by their parents to be stutterers and those who are judged by their parents to be normal speakers. And, again from known data, the same statement can be made regarding the amount of disfluency *at the moment of original judgment or diagnosis.* Certainly, as we have seen, the norms indicate that in the speech of normal or representative youngsters there is a considerable amount of repeating—roughly 35 to 50 instances of repetition per 1,000 words on the average. In the close questioning of hundreds of parents of allegedly stuttering children, one gets the impression that neither the types nor the frequency of disfluency they are referring to in the speech of their own children were very different from the norms *at the moment of diagnosis.* In an impressive number of cases the children do not appear, even at the time of interview, to be more disfluent than the average normal youngster.

In research related to Study III, an effort was made to obtain tape-recorded samples of speech of the children who had served as subjects in that study.[10] This proved possible for 89 matched pairs whose mean age was about 5 years and whose age range was from $2\frac{1}{2}$ to a little over 8. The sample then represented speaking behavior of 89 children who were regarded as normal speakers and 89 children who were regarded as stutterers; it was taken some time after the judgment of stuttering had been made (in an average case about 18 months after). The investigators point out that for the children called "stutterers," the sample may reflect changes that might have occurred in their speech behavior during the time they had been considered to be or were reacted to as stutterers, a change that presumably would not be found in the comparable time for the nonstuttering children whose speech

10 *The Onset of Stuttering, op. cit.,* chap. 8.

previously had been, and was at the time of the recording, positively evaluated and fully accepted as normal by their parents. The speech samples were analyzed by the same method as that used for the analysis of the speech of young adults mentioned earlier in this chapter.

These data and derived measures supported the previous findings that disfluencies occur in the speech of children generally, that there are no "natural" lines of demarcation between "normal" and "abnormal" disfluency. No child in either group was perfectly fluent. The most disfluent boy among the normal speakers was less fluent than nearly two-thirds of the boys who were called stutterers and the most disfluent girl among the normal speakers was less fluent than over four-fifths of the girls regarded as stutterers. A fifth of the boys who were thought of as normal speakers spoke with more disfluency than 30 percent of the boys who were judged to be stutterers and almost the same relationship was observed for the girls. There was much overlapping of both frequency and distribution of disfluencies between the two groups. In the report of the study, the findings were described as clarifying the problem of defining and diagnosing stuttering since they demonstrate "the essential lack of synonymity between" the words disfluency and stuttering.

It is to be emphasized again, however, that we have no data derived from speech samples recorded at or near the *moment of original diagnosis of stuttering*, and that we have been discussing the disfluency characteristic of the speech of children as recorded from one to two years *after* the moment of original diagnosis. It is to be assumed that the records largely or wholly reflect the aggravation of normal disfluency resulting from the diagnosis and its consequent effects on parental policies and practices and, therefore, on relevant aspects of the parent-child relationship.[11]

The data in the onset studies indicate that in the cases investigated the problem of stuttering was to be described, at least when it began, not primarily or alone in terms of types or frequency of disfluencies but "by reference mainly to an interaction between a listener and a speaker in which the listener made a distinctive

[11] Additional data relevant to the general problem under discussion have been reported by George O. Egland and by Mary Bachman Mann in *Stuttering in Children and Adults, op. cit.*, chaps. 6 and 7.

perceptual and judgmental reaction" to the speaker's disfluencies. (*Note:* here and in the text that follows, the word "disfluency" is substituted for "nonfluency" in keeping with the author's later preference.) The circumstances under which the parents first regarded these disfluencies as stuttering

> appeared to be ordinary and unremarkable. What appears to have been crucial was the fact that the parents were motivated to evaluate the disfluencies as unacceptable, or distressing, to classify them as "stuttering" and to react, nonverbally as a rule but verbally in some cases, to them and to the child accordingly. On this basis and in this sense, it is to be said that stuttering arose as a problem that involved the interaction of listener and speaker—that is, of the speaking child and those others, chiefly the child's authority figures, his parents primarily, who listened and reacted evaluatively to his speech. The data indicate that by virtue of this interaction the child tended to acquire from his parents and other important listeners the sorts of perceptual and evaluative reaction to his own speech behavior, and to himself as a speaker, which served to inhibit and disrupt his speech reactions in various forms and to varying degrees. . . . In due course evidently by virtue of the speaker's disruptive perceptual and evaluative reactions to his own speech behavior, the problem came to involve disturbances of speech, in an overt expressive sense. It seems necessary to conclude, therefore, that the listener does more than the speaker to set in motion the interactions essential to the creation of the stuttering problem.[12]

The basic fact is that however stuttering comes about and whatever it may come to be as feeling and overt behavior, it is done by a person. First of all and above all, stutterers are people. To be a stutterer involves more than talking with a certain type or amount of disfluency. It involves also, and as a rule more importantly, a way of feeling about the disfluency, or certain aspects of it, and a way of feeling about its real and imagined consequences. It involves some kind of self-evaluation and a pattern of interpersonal relationships, reactions and interactions with other members of the problem. And it involves the ways in which the individual behaves while talking and at other times, too, because of the fact that he speaks the way he does and feels the way he does about it, and because his listeners react the way they do. A reasonably satisfactory definition, then, may be stated as follows: Stuttering is a

12 *The Onset of Stuttering, op. cit.*, pp. 261–262.

problem of speech behavior involving three definitive factors: (1) speech disfluency, most significantly repetitions of parts of words and whole words, prolongations of sounds, interjections of sounds or words, and unduly prolonged pauses; (2) reactions of the listeners to the speaker's disfluencies as evaluated by them as undesirable, abnormal, or unacceptable; and (3) the reactions of the speaker to the listener's reactions, as well as to his own speech disfluencies and to his conception of himself as a stutterer.[13]

Further, for the speech behavior called stuttering, an approximation of a definition might be that stuttering is what the speaker does while trying not to stutter again. We can elaborate this somewhat and clarify it a bit, perhaps, by saying that stuttering is what the speaker does when he (1) expects to stutter, (2) dreads doing it, and (3) reacts negatively—usually by tensing—not only in anticipation of doing it but also in an effort to avoid doing it. What he does in trying to avoid stuttering amounts to a disruption of speaking which may involve a complete or partial stoppage of speech.

Stuttering, considered in the context of the stuttering problem, may be defined, then, as "behavior." Beyond that, it is learned behavior. How it is learned and how that learning is reinforced become a complicated process, but here is one way to think about it—and this would apply not only to the problem of stuttering but to a rather large segment of human behavior.

If you have learned to expect trouble, as a stutterer learns to anticipate not being able to say certain words, such as his phone number or his name, and if, as a reasonably intelligent person, you have learned to take precautions to avoid the trouble you expect and if these precautions in themselves constitute trouble, then by doing what you do to take these precautions, you confirm your expectation of trouble—and this is reinforcement. If you are a stutterer, then what you do to avoid the trouble you expect are such things as tightening the lips, slowing down, holding the breath, and jamming the tongue up against the back of the teeth as you try to go ahead and talk without stuttering. You are expecting trouble and you are doing things to avoid that trouble, but the things you do are the trouble that you expected to have, and so, by doing what you do, you confirm your expectation. The

[13] Johnson in *Dorland's Illustrated Medical Dictionary*, 24th ed. (Philadelphia: Saunders, 1965).

next time, then, you will be more likely to expect the trouble that sure enough you had the last time you expected it. This way you learn. Nobody teaches you deliberately, of course, but you learn to expect trouble.

We can talk a little more effectively about learning in a case like this if we have a corollary: part of what we do, we do because we don't know what else to do and part of what we do, we do because we don't know any better. It appears we tend to underestimate ignorance as a factor affecting our behavior.

Are there other speech problems that might be mistaken for stuttering? We have already discussed essential differences between stuttering responses and normal disfluencies and the great importance of not equating the one with the other. It should be noted that there are three types of speech disturbance that are sometimes confused with stuttering. In one of these there is a more or less mechanical speech repetition, without the usual emotional reaction, which appears to be caused by certain kinds of brain injury. It is sufficient for purposes of clarification to point out that brain surgeons and other medical specialists occasionally find this condition in their patients, and that it is not stuttering. Practically nothing said in this chapter applies to these patients. Another type of disorder, sometimes confused with the speech difficulty we have been discussing, is commonly called "neurotic stuttering." Superficially it resembles stuttering, but it is basically different in being characterized by sudden onset in adolescence or adult life under conditions of unusual physical or emotional strain. In the military services, particularly under conditions of combat or impending combat, men now and then suddenly exhibit blocked speech that apparently resembles stuttering as seen in adults. From the standpoint of causation and motivation, conditions of onset, course of development of the blocked speech reactions, character and variability of these reactions, related disturbances, and indicated mode of treatment, this type of disorder is to be differentiated from stuttering. It should be given a distinctive name of its own. What has been said in this chapter about stuttering does not refer to psychoneurotically disturbed speech.

The third speech disturbance that is sometimes confused with stuttering is characterized by rapid rate, indistinct articulation,

and some disfluency, but largely or wholly without the tensing, concern, and interfering reactions that characterize stuttering. It has been given the name "cluttering." The definition and clinical significance of the term are in process of clarification. Weiss, in one of the few publications on cluttering, describes it as a "disorder of the thought processes preparatory to speech and based on a hereditary disposition." He continues by explaining that cluttering is the verbal manifestation of a central language imbalance and that as such it affects all channels of communication and behavior in general.[14] As with the two speech problems noted directly above, what has been said in this chapter about stuttering does not refer to cluttering.

INCIDENCE OF STUTTERING

There is considerable variation among published estimates of incidence of stuttering. This variation is probably due to the fact that (1) the proportions of children who stutter may vary from school to school, and, perhaps, even from social class to social class and from culture to culture; (2) survey and examination procedures may differ from one study to another; (3) definitions of stuttering, as actually applied, may differ from one investigator to another; and (4) judgment of stuttering may vary from one listener to another. This fourth point is supported by a number of studies including one by Boehmler, who found that trained judges apply the label of stuttering more often than untrained judges, and by Williams and Kent, who found that judges tend to "hear" what they were instructed to listen for.[15] The Committee on the Midcentury White House Conference of the American Speech and Hearing Association estimated the incidence of stuttering among young people between the ages of 5 and 21 in the United States at seven per 1,000 or 0.7 percent.[16] Enrollment

[14] Deso Arthur Weiss, *Cluttering* (Englewood Cliffs, N.J.: Prentice-Hall, 1964), a publication in the Prentice-Hall Foundations of Speech Pathology series.

[15] Richard M. Boehmler, "Listener Responses to Non-Fluencies," *Journal of Speech and Hearing Research* (1958), *1*:132–141; Dean E. Williams and Louise R. Kent, "Listener Evaluations of Speech Interruptions," *ibid.*, 124–131.

[16] ASHA Committee on the Midcentury White House Conference, "Speech Disorders and Speech Correction," *Journal of Speech and Hearing Disorders* (1952), *17*:129–137. It is interesting to compare the Committee's estimate with

in public and nonpublic elementary and secondary schools by the fall of 1963 had passed 47,000,000.[17] Total population figures for ages 5 through 21 for 1965 were 58,800,000 and projected to 1970 and 1980 were 64,500,000 and 76,800,000, respectively.[18] At the rate of seven per 1,000, this would mean that the total number of stuttering children and young people enrolled in schools had passed 329,000 by 1963; that the number of stuttering children and young people in the total population would be 411,600 in 1965; 451,500 in 1970; and 537,000 in 1980. Any one of these groups would equal the population of a large city. Other estimates and survey findings in this country have ranged between percentages of this general order and somewhat higher figures. One of the earliest studies was that of Wallin, who reported in 1916 that 0.7 percent of 89,057 public school pupils in St. Louis were identified by their teachers as stutterers.[19] In 1942 Mills and Streit reported an incidence of stuttering for the population they surveyed of 1.5 percent.[20] Reporting in 1955 an analysis of data obtained in a survey of over 20,000 school children in Grades I through XII in five Iowa counties in the period 1939–1942, Schindler indicates that 0.55 percent were classified as stutterers. The author states, "For a diagnosis of stuttering, corroboration of the examiner's judgment was required. No child was classified as a stutterer unless he was so regarded by his teachers, parents, and associates."[21]

A useful generalization would appear to be that in every 100 to 175 children in the United States there is one who stutters. So

D. E. Morley's 0.8 percent for incoming transfer students at the University of Michigan; see "A Ten-Year Survey of Speech Disorders among University Students," *ibid.* (1952), *17*:25–31.

17 "51 Million and More," *School Life* (1963), *46*:17.

18 *Statistical Abstract of the United States*, 1965, 86th ed. (Washington: U.S. Department of Commerce, U.S. Bureau of the Census, 1965), p. 6. Population figures used above represent totals of census figures for the age groups 5 through 9 years, 10 through 14, and 15 through 19, plus one-fifth of the total for the group 20 through 24.

19 J. E. Wallace Wallin, "A Census of Speech Defectives among 89,057 Public-School Pupil—a Preliminary Report," *School and Society* (1916), *3*:213–216.

20 A. W. Mills and H. Streit, "Report of a Speech Survey, Holyoke, Massachusetts," *Journal of Speech Disorders* (1942), *7*:161–167.

21 Mary Dupont Schindler, "A Study of Educational Adjustments of Stuttering and Nonstuttering Children," in *Stuttering in Children and Adults, op. cit.*, chap. 29.

in a school with an enrollment of 3,500 there are likely to be from 20 to 35 stutterers. In the state of Iowa, for example, with approximately 600,000 children of school age, there would be from 3,400 to 6,000 stuttering children. Often there are more of these youngsters than can be served adequately by the present working force of public school speech clinicians; it is very important, therefore, that their needs be reasonably well-appreciated by their classroom teachers. Moreover, the classroom teacher can often do a good share of what most needs to be done for a child with this particular problem.

Cultural and socioeconomic factors As has been stated, it is probable that the incidence of stuttering varies from culture to culture and perhaps from one socioeconomic level to another within a culture. Substantial indications of this became known in the early forties as a result of studies made among the Bannock and Shoshone Indians of Idaho.[22] No stuttering was found among these tribes and they appeared to have no word for stuttering. Since then, other explorations of cultural variations in the incidence of stuttering have been made. In a doctoral dissertation by John J. Morgenstern at the University of Edinburgh, information obtained from 258 anthropological field workers in various parts of the world is assembled and analyzed.[23] Dr. Morgenstern lists the following peoples as ones who "do not stammer" and who seem to have no words for this condition:

1. The Wapishianas of British Guiana, 2,500 persons. The informant, a missionary who had lived in the area for 17 years, reported that no children or adults stammer and that they have no word for stammering.

[22] Johnson, "The Indians Have No Word For It: I. Stuttering in Children," *Quarterly Journal of Speech* (1944), *30*:330–337; see also by the same author, *People in Quandaries: the Semantics of Personal Adjustment* (New York: Harper & Row, 1946), chap. 17. The Bannock and Shoshone study is also reported and discussed by John Snidecor in "Why the Indian Does Not Stutter," *Quarterly Journal of Speech* (1947), *33*:493–495. Relevant information concerning the Navaho Indians, as well as certain Eskimo, Australian, and South Pacific cultures, is to be found in Adelaide K. Bullen, "A Cross-Cultural Approach to the Problem of Stuttering," *Child Development* (1945), *16*:1–88.

[23] John J. Morgenstern, "Psychological and Social Factors in Children's Stammering," unpublished Ph.D. dissertation (University of Edinburgh, Scotland, 1953). Permission granted by Dr. Morgenstern to quote from this dissertation is gratefully acknowledged.

2. The Patamonas, 1,100 persons, and Akawaio, 1,500 persons, in British Guiana. The informant, a physician, reported:

I travel extensively and visit all Amerindian tribes in British Guiana. . . . I have probably met 99 percent of all Amerindians. I have never encountered a case of stuttering or blocking. I have not had time to make extensive inquiries amongst all tribes, but the Akawaio and Patamonas do not know the condition, and my imitations caused great amusement. They possess a word for "dumbness" but this is all.

3. Garia, forty miles west southwest of Madang, Territory of New Guinea. The informant, a physician, reported that he had observed no stuttering among these people. "They do not have a word for it. The problem does not arise."

4. Kelabits, West Borneo. The Curator of the Sarawak Museum reported: "They have no word for it. I have never seen it among children or adults. . . . I really know these people intimately. . . ."

5. Malayan Aborigines (Negrito, Senoi, Aboriginal Malay), Malaya. The Director of Museums, Kuala Lumpur, stated:

Have not observed it among children nor adults. There are some 16 languages and I have not been able to trace a word in any one. . . . I have . . . some 60 Aborigines from 11 different groups on my staff and none can recall a case amongst themselves although they gleefully told me of Europeans and Malays they had met with this affliction.

6. Sonthals, Bhuyans, and Gatwas (from Behar), Turis and Tantis (from Orissa), Assam, India. The informant, a physician, reported:

No children or adults stammer. . . . The above statement applies only to the labourers and their families employed on the Tea Estates of a British Company in this Central Area of the Assam Valley of the River Brahmaputra. . . . These people are not recent arrivals (new recruits to these parts). Most of them have been here for two or three generations but they have not intermixed with any of the other communities of Assam. . . . I have not been able to get hold of any word for stammering or stuttering in any of the dialects. . . .

(The report, says Dr. Morgenstern, "goes on to cite quite common stammering among other residents of this area—Hindus, Moslems, Ahoms (Buddhists), particularly among the literate.")

Dr. Morgenstern's study indicated also that many tribes were

found to have a word for stuttering and to have some stutterers among them. Occasionally a word for stuttering was present in the language of a tribe but was used mainly or entirely to refer to the stuttering found among neighboring tribes. It is of special interest that two cultures were found to have an apparently excessive amount of stuttering. Dr. Morgenstern reports that a survey conducted by 13 headmasters of primary schools and 20 Ibo schoolteachers among 5,618 Ibo school children in Southeast Nigeria resulted in 2.67 percent being classified as stammerers. Dr. Robert Armstrong, an American anthropologist working among the Idoma people of Nigeria, made the following report to Dr. Morgenstern:

> Stammering (in the sense of the spasmodic repetition of the same speech sound) is practically a mass phenomenon here. I have met many dozens of persons who stammer in some degree. . . . Ability to speak well in public is vastly admired in West Africa, and Idoma and Ibo country is no exception to this statement. People make speeches on the slightest pretext—long, narcissistic speeches. . . . There is strong ridicule from the stammerer's age-mates. . . .

A third culture in which there may be excessive stuttering—there appears to be some question of whether it is stuttering as we know it—is that of the Messiria Arabs of the Baggara Group, Southwest Kordofan, Republic of the Sudan.

A related study has been made by Lemert "covering eight reserves of Salish Indians, two Kwakiutl and one Nootka, all located on the coastal mainland of British Columbia and Vancouver Island," supplemented by "interviews from two Haida informants, one Tsimshian and one Nootka who were not living in their respective areas. . . ."[24] Lemert found stuttering in these cultures with incidence rates probably equal to or possibly exceeding our own. He also found words for stuttering in the languages of these cultures. Particularly interesting is the information he reports concerning the peculiar competitive emphasis throughout the cultures of the Northwest Coast. Individuals and their families at the same time were strongly penalized socially for abnormalities of speech or of other characteristics. "This made the clan or family particularly sensitive to the deviations of

[24] Edwin M. Lemert, "Some Indians Who Stutter," *Journal of Speech and Hearing Disorders* (1953), *18*:168–174.

its members and led to exacting educational practices. . . . The rigorous child-training procedures held especially when participation in feasts, potlaches and associated rituals was demanded of the individual." Lemert concludes with the statement that "the cultural and sociopsychological prerequisites for the development of stuttering were strongly operative in the Northwest Coast." Thus we have (1) the cultural recognition and symbolizing of stuttering, (2) social penalties for the disorder, (3) specific anxieties about the speech development of children on the part of the parents, and (4) internalization of sensitivity about speech in both the child and adult.[25]

In 1958, Stewart undertook to compare two Indian groups on the basis of the presence or absence of the problem called stuttering, using recognized anthropological methods of cultural observation and direct interviewing.[26] He chose the stuttering tribes of the Lemert study for his stuttering group and the Ute, Indians of Shoshonean stock who lived in Utah, for his nonstuttering group. As pointed out in Johnson's forward to the published study, the findings indicate that "hesitant and repetitious speech does not, in and of itself, constitute or give rise to the problem of stuttering." The data suggest that the absence of the stuttering problem appears to be associated with warmer and more permissive child-rearing practices and with less competition particularly in ceremonial speaking, while the presence of the stuttering problem appears to be associated with less warm and less permissive child-rearing practices and with more competition particularly in ceremonial speaking. Johnson sees the findings as extending to the cross-cultural plane the hypothesis of listener and speaker interaction derived from data in the onset studies already described.

In the earlier studies of the Bannock and Shoshone Indians of Idaho, as has been stated, no stutterers were found and no word for stuttering could be identified. The cultures of the Bannock

25 *Ibid.*, p. 173; see also Lemert, "Stuttering and Social Structure in Two Pacific Societies," *ibid.* (1962), 27:3–10, for a discussion of cultural patterns in Japan, where the incidence of stuttering is relatively high, and in Polynesia, where it is lower.

26 Joseph L. Stewart, "The Problem of Stuttering in Certain North American Indian Societies," monograph 6, *Journal of Speech and Hearing Disorders* (1960).

and Shoshone Indians seemed to be favorable to freedom from tensions or concern about childhood speech, particularly with respect to child-rearing policies and customs. As Dr. Lemert puts it, in commenting about the Idaho tribes,

> In decided contrast to the Northwest Coast culture . . . no interfamily nor interclass relationships complicated the family treatment of abnormal children. Family attitudes are portrayed as kind, helpful, sympathetic, and although protective are not overprotective.[27]

All these studies appear to indicate not only definite variations in incidence of stuttering from culture to culture, but they suggest also that, as Dr. Morgenstern concludes, "Stammering incidence in a culture is very highly correlated with cultural practices of stigmatization of the stammering, particularly with parental anxiety over the possibility of their children's stammering."[28] In cultures in which stuttering is not observed, there appears to be little or no concern over childhood speech, little or no ritualistic or ceremonial speech perfection required of children, no clearly conscious imposition of "norms" of speech development, and an apparent lack of "pressure" or "tension" of the types calculated to result in disturbances of the speech of children. These conclusions have been fostered by Stewart's findings. It is to be hoped that other systematic investigations will be undertaken now that the fruitfulness of the cultural approach to the problem of stuttering has been indicated.

The picture sketched so far may be filled in a bit by reference to findings reported in Study II and Study III of the onset series and again by Morgenstern. In Study II, 80 percent of the families of the 50 stuttering children were from the middle and upper socioeconomic classes, as defined by Warner. In Study III, 70 percent of the 150 stuttering children and their families were classified as middle or upper socioeconomic classes. This distribution is looked upon as a deviation from the normal distribution of families according to the Warner classification. In Study II, Darley's comparison of parents of stuttering children and parents of nonstuttering children suggests that what is probably more important than socioeconomic class, as such, however, is the degree of "upward mobility" (drive or intensity of determination

[27] Lemert, *op. cit.*, p. 174.
[28] Morgenstern, *op. cit.*

and effort to rise socioeconomically) of the family. "Upward mobile" families may, as a general rule, be expected to experience to a greater than usual degree the tensions attendant upon competitiveness, and to place a correspondingly high value on absence of defects and on good or superior speech in their children, which they consider important in the competition for status.[29]

Morgenstern surveyed some 35,000 school children in Scotland and reported a notable concentration of stutterers in the socioeconomic class representative of "semiskilled manual wage earners" and a comparatively low stammering incidence among "unskilled labourers, industrial and agricultural." The differences he obtained were shown by him to be statistically significant. He stresses the "upward mobility" factor in making the point that in his survey region, it is the semiskilled laborer who stands the best chance of "getting ahead" into the next higher class through a sufficient show of ambition. The semiskilled laborer is particularly likely, therefore, to be unusually ambitious for his children and to appreciate the advantage of speech fluency to the child in his effort to improve his social and economic status.[30]

With a realization of the need for further research along these lines, one may, at this point, entertain the definite impression that the more information we accumulate, the more stuttering seems to take on the appearance of a disorder of civilization, so to speak. It could well be that it is a part of the price we pay for the particular culture we make for ourselves. We may wisely note the possible importance in individual cases of the indicated competitive and perfectionistic practices and attitudes in the home, the school, the community, and the culture at large.

IMPORTANT COMMON QUESTIONS ABOUT STUTTERING

Some of the more basic questions which you are likely to want to ask at this point will be considered. These are also among the more important questions that stutterers and their parents want

29 *Stuttering in Children and Adults, op. cit.*, chap. 4, and *The Onset of Stuttering, op. cit.*, chaps. 2 and 4. For Warner's system of socioeconomic classification see W. Lloyd Warner, Marchia Meeker, and Kenneth Eels, *Social Class in America* (Chicago: Science Research Associates, 1949).

30 Morgenstern, *op. cit.*

to have answered, and it will be to your advantage to be familiar with them.

In the matter of questions and answers, you will do well to remember that as a speech clinician or classroom teacher you will be dealing with people who may or may not be well-informed about the subject at hand. It appears that many people hold beliefs and attitudes that have little or no relation to anything that could be called an adequate examination of sufficient information in a disciplined fashion. Some beliefs are almost universal, but no one has thought to examine, or challenge, or even to wonder about them. There is something, therefore, that we can usefully call "folk thinking." A great deal of what passes for individual decisions, individual opinions, may really be a manifestation of folk thinking, a sharing of folk thinking. In the case of the stuttering problem, this folk thinking has led to widely accepted assumptions on the part of people who have never done research and who have never examined quantities of information or even any information. They, nevertheless, have theories and they have preferred explanations. Perhaps the most popular folk theories about stuttering are that it is caused by a physical defect or that it is a symptom of a personality disturbance. As we shall see in the discussion below, research findings do not support either theory.

Is stuttering due to some organic fault? Approximately 2,300 years ago Aristotle allegedly asserted that stuttering was due to a defect of the tongue.[31] The tongue is easy to observe, and as we now know, and as might have been discovered at any time by means of simple observation, stutterers' tongues are normal. Nevertheless, roughly only a century ago some of the leading surgeons of Europe were still treating stuttering by cutting pieces out of stutterers' tongues! This is, of course, only one

[31] For a fascinating historical summary of theories of stuttering, including the interpretation of Aristotle's views cited here, see G. M. Klingbeil, "The Historical Background of the Modern Speech Clinic," *Journal of Speech Disorders* (1939), *4*:115–32. Dr. Morgenstern, *op. cit.*, and in personal communication to the writer, has expressed strong doubt that stuttering as we understand it was known to the early Greeks; he questions whether Aristotle made reference to stuttering as we know it. The belief in a physical cause of stuttering has been traditional in Western culture for a considerable period, of course. Intensive historical studies of these matters are greatly needed.

of the more dramatic bits of evidence that in our general culture there is a powerful tradition of belief to the effect that faulty behavior is caused by faulty physical structure.

Meanwhile, what might be said in a proper spirit of scientific responsibility as to the likelihood of our ever discovering an organic or physical cause for stuttering?

First of all, the facts we now have about stuttering and stutterers do not make obvious, or even slightly apparent, what the precise nature of such a causal condition would be. Moreover, known facts give us no clear clue as to the specific parts of the body in which we are to look. We are hard put, therefore, to decide whether current research methods might or might not be used profitably or precisely how they are to be modified for purposes of detecting the character, location, and mode of operation of the organic condition to be sought. In short, we find ourselves at a loss as to the direction that we are to tell the investigator to go. We are left essentially in the position of having to suggest that he search for a needle no one has ever seen, in a haystack we do not know how to find. We can tell him, however, that the needle he is to bring back must possess certain properties.

That is, if ever an organic condition is found to be responsible for stuttering, it must be one that will function in certain ways. It must be the kind of organic condition that will operate to produce such effects as these:

1. The average stutterer stutters on about 10 percent of the words he speaks, and he produces the other 90 percent normally. The organic condition must account for the 90 percent fully as well as it does for the 10 percent.

2. Most stutterings last one or two seconds, or less. The organic condition must function as a cause for time periods this brief, and it must not function in the intervening intervals when there is no stuttering.

3. No two stutterers perform their stuttering in exactly the same way; any one stutterer varies somewhat, and can be trained to vary markedly, in manner of performance during any given day or hour, and from week to week and year to year. The organic condition must operate to cause an effect that varies as to form in this fashion.

4. Stuttering begins, in the average case, at about the age of 3

years. In some cases, however, it begins earlier than this, and in others, somewhat later. The physical cause must lie dormant for corresponding average and exceptional periods of time before beginning to function.

5. A considerable number of individuals are reported to have stuttered during some period in their lives and to have "outgrown" the difficulty without undergoing treatment. The physical cause must, therefore, be one that in some cases apparently subsides or atrophies after having flourished for a time.

6. Stuttering has been eliminated in substantial numbers of cases by means involving no recognized changes in the organic condition of the stutterer.[32] The physical cause must be one that ceases to function in such cases in the absence of any intended or known physical alteration of the person.

7. Practically all stutterers can sing, or speak in time to almost any sort of rhythm, or speak without stuttering under conditions created by sufficient intensities of sound or noise fed into the ears while speaking; some can act on the stage; most of them can talk to themselves, or to their pets, or they can whisper, or shout, speak with a dialect, or by using an electrolarynx, or read in chorus with another person—even a fellow stutterer, with no stuttering or practically none.[33] The organic cause must be one

[32] For a review of published reports of results of stuttering therapy see Williams, "Intensive Clinical Case Studies of Stuttering Therapy," in *Stuttering in Children and Adults, op. cit.*, chap. 39, and for a listing of titles related to stuttering therapy procedures and research see Dorothea Bradford, "A Survey of Contemporary American Literature in Stuttering Speech Rehabilitation," *Asha* (1964), *6*:13–16.

[33] Oliver Bloodstein, "Hypothetical Conditions under Which Stuttering Is Reduced or Absent," *Journal of Speech and Hearing Disorders* (1950), *15*:142–153; Virginia Barber, "Chorus Reading as a Distraction in Stuttering," *ibid.* (1939), *4*:371–383, and "Rhythm as a Distraction in Stuttering," *ibid.* (1940), *5*:29–42; Johnson and L. Rosen, "The Effect of Certain Changes in Speech Pattern upon Frequency of Stuttering," *ibid.* (1937), *2*:105–109; Jean Ann Maraist and Charles Hutton, "Effects of Auditory Masking upon the Speech of Stutterers," *ibid.* (1957), *22*:385–389; Colin Cherry and Bruce McA. Sayers, "Experiments upon the Total Inhibition of Stammering by External Control, and Some Clinical Results," *Journal of Psychosomatic Research* (1956), *1*:233–246; also Frederick A. McKenzie, "A Stutterer's Experiences in Using an Electrolarynx," and Mary Lou Sternberg Share, "Effect on Stuttering of Alteration in Auditory Feedback," in *Stuttering in Children and Adults, op. cit.*, chaps. 22 and 41. See also Hugo H. Gregory, "Stuttering and Auditory Central Nervous System Disorder," *Journal of Speech and Hearing Research* (1964), *7*:335–341.

that—for some reason that is to be identified—operates feebly or not at all under these conditions.

8. More stuttering occurs on words that are nouns, verbs, adjectives, and adverbs; that begin sentences; that are longer than the average word; and that begin with consonants rather than vowels.[34] The organic condition must exhibit a tendency—which in turn is to be explained—to vary in systematic relationship to the indicated attributes of words spoken by the individual.

9. Strother and Kriegman found no differences between young adult stutterers and nonstutterers in ability to perform rapid or rhythmical movements of the lips, tongue, jaw, and breathing musculature. The authors also reviewed and analyzed data reported by several other investigators whose findings, taken all together, confirmed their own.[35] The organic cause must, therefore, be one that permits the structures used for speech to function normally in performing such rapid or rhythmical movements.

10. Ritzman found no significant differences between stutterers and nonstutterers in measurements of heart rate, blood pressure, and basal metabolism.[36] The organic condition must be one that evidently does not unfavorably affect these vital bodily functions.

11. At one time it was suspected that the inner condition being sought had been or might be found in handedness, or change of handedness, or the central nervous system organization presumably related to handedness. In this specific area of investigation there has been a gradual development of increasingly refined sampling, interviewing, testing, and statistical procedures.

[34] Spencer F. Brown, "The Loci of Stutterings in the Speech Sequence," *Journal of Speech Disorders* (1945), *10*:181–192.

[35] C. R. Strother and L. S. Kriegman, "Diadochokinesis in Stutterers and Non-Stutterers," *Journal of Speech Disorders* (1943), *8*:323–335; "Rhythmokinesis in Stutterers and Non-Stutterers," *ibid.* (1944), *9*:239–244.

[36] C. H. Ritzman, "A Cardiovascular and Metabolic Study of Stutterers and Non-Stutterers," *Journal of Speech Disorders* (1943), *8*:161–182. Earlier studies in which different procedures of sampling, testing, and analysis were used were those of Travis, W. W. Tuttle, and D. W. Cowan, "A Study of the Heart Rate during Stuttering," *ibid.* (1936), *1*:21–26; and M. F. Palmer and A. M. Gillette, "Sex Differences in the Cardiac Rhythms of Stutterers," *ibid.* (1938), *3*:3–12. Later confirmation of Ritzman's finding of essential similarity between stutterers and nonstutterers is to be found in Arnold J. Golub, "The Heart Rates of Stutterers and Non-Stutterers in Relation to Frequency of Stuttering during a Series of Oral Readings," unpublished Ph.D. dissertation (University of Iowa, 1952).

The more recent and technically more satisfactory studies have not supported the view that stutterers and nonstutterers are different in any significant sense with respect to handedness.[37] In neither Study I nor Study II of the onset series, with samples totalling 96 stuttering and 96 nonstuttering children, nor in the subsequent research in Study III, involving 150 stuttering children and 150 matched controls, have group differences as to handedness been found.[38] The physical condition to be sought, therefore, must be one that apparently does not affect the organism in such a way as to reveal itself in handedness characteristics.

12. Two comprehensive and critical reviews of over 150 studies in physiology and biochemistry concerning stuttering have been published by Hill. In a statement concluding his evaluation of this impressive amount of scientific investigation Hill says, "An agent in the form of an inner condition . . . is still as distant from discovery as it was 4,000 years ago. Advances in theory have only been attained through recognition of situational influences on behavior."[39] The previously mentioned studies of stuttering and nonstuttering children have not revealed any differences between them relevant in this connection. Finkelstein and Weisberger administered the Oseretsky Tests of Motor Proficiency to 15 stuttering and 15 nonstuttering children matched for age, sex, and laterality and found no group differences.[40] The organic condition in question must be sufficiently subtle and

[37] H. J. Heltman, "Contradictory Evidence in Handedness and Stuttering," *Journal of Speech Disorders* (1940), *5*:327–332; Johnson and Arthur King, "An Angle Board and Hand Usage Study of Stutterers and Non-Stutterers," *Journal of Experimental Psychology* (1942), *31*:293–311; Egbert Joseph Spadino, *Writing and Laterality Characteristics of Stuttering Children*, no. 837 in Contributions to Education series (New York: Teachers College, Columbia University Press, 1941).

[38] *The Onset of Stuttering, op. cit.*

[39] Harris Hill, "Stuttering: I. A Critical Review and Evaluation of Biochemical Investigations," *Journal of Speech Disorders* (1944), *9*:245–261; "Stuttering: II. A Review and Integration of Physiological Data," *ibid.* (1944), *9*:289–324.

[40] Phyllis Finkelstein and Stanley E. Weisberger, "The Motor Proficiency of Stutterers," *Journal of Speech and Hearing Disorders* (1954), *19*:52–58. Another study in which no evidence of difference between stutterers and nonstutterers was found with respect to psychomotor coordination or stability was that of Francie L. Ross, "A Comparative Study of Stutterers and Nonstutterers on a Psychomotor Discrimination Task," in *Stuttering in Children and Adults, op. cit.*, chap. 30.

elusive to escape detection by means of these tests and the varied and intensive scientific investigations such as those reviewed and evaluated by Hill.

This list is not exhaustive, and so—to return to the metaphor—the needle our investigator is to bring back will have to possess still other properties in addition to those that have been specified. In any event, it is destined to be a needle most certainly out of the ordinary. If only out of curiosity as to precisely what it could look like, one cannot but hope there might turn out to be such a needle and that it might be found. Meanwhile, we are frustrated by the fact that we cannot tell our investigator where to find the haystack.

Is stuttering a psychoneurosis or a symptom of personality maladjustment? As we mentioned earlier, traditionally there have been two folk theories of stuttering—and of practically every other problem of human behavior. One of these has been that stuttering is a symptom of some sort of physical fault; this is the view we have considered above. The other has been that stuttering is a symptom of some kind of "personality disturbance," or "psychoneurosis," or "personal or social or emotional maladjustment."

In one of the early studies in this area, Johnson employed interviews, written autobiographies, and tests in an exploration of the personal and social adjustments of 80 stutterers.[41] He concluded that "the adaptations and attitudes of stutterers, especially insofar as they constitute emotional and social maladjustment, have been found to be in many important respects the results of stuttering." As one part of his study, Johnson administered the Woodworth-House Mental Hygiene Inventory to 50 stutterers, 39 male and 11 female, ranging in age from 15 to 34 years with an average age of 21½ years. He compared their responses with those of 70 diagnosed psychoneurotic individuals with an average age of 32½ years, and 400 male college students with an average age of 19½ years, at Princeton, Harvard, West Point, and four universities in the New York City area tested by House in standardizing the

41 Johnson, "The Influence of Stuttering on the Personality," in *University of Iowa Studies in Child Welfare* (University of Iowa, 1932), 5:no. 5.

Inventory.[42] Mean inventory scores for the three groups were as follows: childhood—stutterers 10.8, House's students 11.9, House's psychoneurotics 6.9; maturity—stutterers 26.2, House's students 25.1, House's psychoneurotics 38.1. When the groups are compared with respect to the percentages of their problems that were identified by them as extreme, the following figures were obtained: childhood—stutterers 19.5, students 19.3, psychoneurotics 26.7; maturity—stutterers 19.3, students 16.1, psychoneurotics 35.9. In general, the stutterers rather closely resembled the presumably normal or representative college students and differed markedly from the psychoneurotics. It is of special interest that 10 of the stutterers analyzed their own test responses and judged over half of their problems, 48 percent of their childhood problems and 58 percent of their maturity problems, to be due to their stuttering.

Since the time of this study there have been several other investigations in which stutterers and nonstutterers have been compared by means of various procedures for evaluating personality. Walnut used the Minnesota Multiphasic Personality Inventory (MMPI) as a means of comparing 38 stutterers, 25 crippled subjects, 26 persons with cleft palate, and 52 presumably normal subjects—all groups being of high school age.[43] He reported mean scores for nine MMPI clinical scales and on all of them the groups fell within the normal range, approximating the norms for the test. Group differences within the normal range were of a kind that indicated "the specific area of deviation of the stuttering group" was that of speech. That is, the stutterers seemed to be a little more discouraged and unsure of the reactions of other persons in situations where speech was involved.

The MMPI has been used also by Dahlstrom and Craven in a

42 S. Daniel House, "A Mental Hygiene Inventory: A Contribution to Dynamic Psychology," *Archives of Psychology* (1927), whole no. 88. The Inventory consists of 100 statements of personality problems, 30 referring to childhood (up to age 14) and 70 to adulthood (beyond age 14). The score for each part of the test, childhood and maturity, is the number of problems which the individual identifies as his own in either moderate or extreme degree. On the childhood items, House's psychoneurotics, possibly as a function of repression or distortion of memory, scored lower than his normal students.

43 Francis Walnut, "A Personality Inventory Item Analysis of Individuals Who Stutter and Individuals Who Have Other Handicaps," *Journal of Speech and Hearing Disorders* (1954), *19*:220–227.

study of 80 male and 20 female stutterers.[44] The authors compared the stutterers' scores with those of 100 presumably normal university freshmen and with data obtained by other investigators from psychiatric cases and university students with adjustment problems of presumably nonpsychiatric grade for which they had sought counseling. No consistent pattern of personality was found to be distinctive of stutterers, and such differences as were found among group means for subscores on the test indicated the stutterers were much better adjusted than the psychiatric patients, tended to show certain resemblances to the students with problems, and insofar as they were different from the presumably normal subjects they were a bit more discouraged, socially withdrawn, and uneasy in social situations. Scores on the test were not found to be related to severity of stuttering.

Similar findings were reported by Richardson who studied differences between 30 adult stutterers and 30 nonstutterers, matched for age, sex, education, and intelligence, by means of the Guilford Inventory of Factors STDCR, the Rorschach ink-blot test, and the Murray Thematic Apperception Test.[45] In the Murray test the subject is requested to respond to each of a series of pictures of one or more persons shown in a more or less undefined setting, by telling what he supposes has happened to the persons in the picture, what is happening, and how it will turn out. The Guilford test indicated that the stutterers were somewhat more socially introverted, withdrawn and depressed, and less happy-go-lucky. The Rorschach responses, generally difficult to interpret sharply, seemed to suggest that the stutterers "tended not to recognize their inner promptings" and not to "respond impulsively to outside environment" as much as did the nonstutterers. The Murray Thematic Apperception Test results revealed "no significant differences between the groups in the proportions of needs, reactions to frustrations, themas, attitudes toward environment, ade-

44 W. Grant Dahlstrom and Dorothy Drakesmith Craven, "The Minnesota Multiphasic Personality Inventory and Stuttering Phenomena in Young Adults," abstract, *American Psychologist* (1952), 7:341. See also Dahlstrom and George Schlager Welsh, *An MMPI Handbook, A Guide to Use in Clinical Practice and Research* (Minneapolis: University of Minnesota Press, 1960), p. 392.

45 LaVange Hunt Richardson, "A Personality Study of Stutterers and Nonstutterers," *Journal of Speech Disorders* (1944), 9:152–160.

quacy of the central character, and satisfactory or unsatisfactory endings" of the stories made up in response to the pictures.

Using a test of the individual's conformity with group norms with respect to fundamental value judgments, Spriestersbach also found stutterers to differ markedly from psychiatric patients and to show, in comparison with presumably normal nonstutterers, relatively slight degrees of social maladjustment.[46] His group consisted of 50 male stutterers, with a median age of 21½ years, 183 nonstuttering male university students, with a median age of 20½ years, and 20 male psychotic patients in a state mental hospital, with a median age of 47 years. Each subject was shown a number of pictures, each of which represented one or more persons engaged in some sort of activity. The subject rated each picture, using a 7-point scale ranging from *1*, extremely poor, to *7*, extremely good, as an example of persons engaged in *worthwhile* activity, or *good*, or *peculiar* activity, and so forth—in all, 15 pictures were used and each was rated by each subject as an example of the kind of activity represented by each of 11 words. In addition to the three words already mentioned, the following also were used: fun, foolish, funny, interesting, undesirable, unpleasant, wholesome, work. The median ratings of the stutterers and the nonstuttering students were not significantly different, but the median ratings of both of these groups differed very considerably from those of the psychotics. A few more stutterers than nonstuttering students tended to give ratings that were relatively extreme.

In 1955, Staats published a study of the sense of humor in 26 college age male stutterers and 120 nonstuttering male university students. Using a 7-point scale, each subject rated the funniness of each of 20 cartoons, 10 involving characters with impairments or handicaps and 10 depicting normal characters in presumably funny situations. No significant difference between the stutterers and nonstutterers was found with respect to ratings of any single cartoon of either type.[47]

The Rosenzweig Picture-Frustration Test was administered by

[46] Spriestersbach, "An Objective Approach to the Investigation of Social Adjustment of Male Stutterers," *Journal of Speech and Hearing Disorders* (1951), *16*:250–257.

[47] Lorin C. Staats, Jr., "Sense of Humor in Stutterers and Nonstutterers," in *Stuttering in Children and Adults, op. cit.*, chap. 24.

Quarrington to 30 adult stutterers. "No significant differences between stutterers and normals were found on seven test characteristics examined." Quarrington stated that he found no support for the "assertion that stuttering is a sympton of a basic character neurosis."[48]

Sheehan reviewed 20 studies concerning the personality of stutterers, studies in which use was made of projective methods, "the best tools modern clinical psychology has to offer." He found that except for a somewhat lower level of aspiration, stutterers showed no "reliable" personality differences from nonstutterers and that no consistent personality pattern could be found for stutterers.[49] On the basis of a survey covering 25 years of research in the area, Goodstein reports that findings do not indicate that children regarded as stutterers are neurotic or severely maladjusted and that "there is no general support for the notion that adult stutterers are severely maladjusted or even consistently different from anyone else."[50] Data related to various dimensions of personality in the stuttering and nonstuttering children who served as subjects in Study II and Study III of the onset series did not support either basic or objective differences between the experimental and the control groups in terms of social and emotional development.[51]

The general conclusion to be drawn from these investigations would appear to be that stutterers differ very considerably from psychoneurotic or psychotic patients, that they differ slightly or not at all (depending on the type of test) from presumably normal nonstutterers, and that whenever stutterers are found to differ from nonstutterers on measures of personality, they differ in tending to be a bit more depressed or discouraged, a bit more anxious, or uneasy, or unresponsive, especially in speech situations, and somewhat more withdrawn socially. The kinds and degrees of difference indicate not a serious personality maladjustment, but rather a normal kind and amount of emotional

[48] Bruce Quarrington, "The Performance of Stutterers on the Rosenzweig Picture-Frustration Test," *Journal of Clinical Psychology* (1953), *9*:189–192.

[49] Joseph G. Sheehan, "Projection Studies of Stuttering," *Journal of Speech and Hearing Disorders* (1958), *23*:18–25.

[50] Leonard D. Goodstein, "Functional Speech Disorders and Personality: A Survey of the Literature," *Journal of Speech and Hearing Research* (1958), *1*:359–376.

[51] *The Onset of Stuttering, op. cit.*, pp. 41, 63–69, and 259–260.

reaction to the sorts of frustrating, threatening, and unpleasant experiences that stuttering involves. If stutterers did not react at all to their stuttering, it might perhaps be inferred that they were abnormally bland or lacking in normal feelings. They seem on the average to react just about enough and in just about the right ways to indicate that as a group they are emotionally normal.

Moreover, this general impression appears to be borne out by our onset studies of stuttering and nonstuttering children and their parents, previously discussed, and by our general clinical experience with a considerable and presumably more or less representative sampling of stutterers. In Study II, the Rogers Test of Personality Adjustment was used to compare 28 stuttering and 18 nonstuttering children 14 years old and younger; no statistically significant differences were found.[52] On the whole, those who stutter seem to be much like those who don't—except that they do stutter and this brings them a certain amount of distress. Some react to this in ways that amount to considerable maladjusment; others react in exceedingly constructive and wholesome ways; the majority lie between these two extremes. Like individuals who don't stutter, stutterers have the usual human reasons for becoming maladjusted and apparently about the same proportion of them as of other persons seek and need psychiatric help, and for essentially the same sorts of reasons. In our clinic at the University of Iowa, we have worked for about 35 years in close relationship with the Department of Psychiatry. We have referred for psychiatric evaluation probably 3 to 5 percent of our cases—those who have appeared to be in greatest need of such referral. It is a fair estimate that about three-fourths of those referred have been sent back by the psychiatrists with the statement that, in effect, they did not have enough need of psychiatric therapy to warrant time being spent with them in their Department. On the basis of this rather long record of experience, our own clinical observations and impressions, and the data that have been obtained in studies of the sort reviewed here, it does not appear possible to conclude that stuttering is a psychoneurosis or a symptom of a distinctive personality maladjust-

[52] *Stuttering in Children and Adults, op. cit.*, chap. 4, and *The Onset of Stuttering, op. cit.*, chap. 2.

ment. It does seem incontrovertible that in some cases the experience of stuttering produces a certain amount of personality maladjustment and, in addition to this, there appears to be no ground for assuming that among the people who stutter there would not be the same proportion as of the general population who have the customary kinds and grades of personality maladjustments. By and large, stutterers are people who stutter.

Is stuttering hereditary? Not very much is known in scientific detail about *human* heredity, even with respect to physical characteristics, such as eye color, bodily size and shape, dental structures, and so forth. Still less is known about the relation between inherited bodily characteristics and *behavior.* Practically nothing is known about human heredity with respect to such reactions as anxiety or fear, which plays so large a role in stuttering.[53]

This we do know: each one of us inherits a body. Regardless of whether a child's chin, for example, resembles that of his mother, or his father, or neither, he inherited it. He was born with it. The condition of the mother during pregnancy may or may not have modified it; our best hypothesis is that essentially the chin the child had at birth was laid down structurally in the genes present at the very beginning of his embryonic development. And the same is to be said of all the other parts of the child's body, and of his body as a structural unit.

Since we can be sure this is true, it is to be taken into account in any statements we might conceivably make about the "inheritance" of any particular type of *behavior,* such as stuttering. Many physiological, neurological, biochemical, and anatomical studies have been made comparing stutterers and nonstutterers, and the net result has been that no specific organic or physical cause of stuttering has been demonstrated. Such causes would

53 Many writers who prefer to assume a physical cause of stuttering imply that the causal condition is congenital—that is, present at birth. Many of them also apparently assume that it is hereditary—transmitted from parent to offspring. Certain other writers make no clear statement or implication restricting the organic cause to a hereditary or congenital condition, and it seems reasonable, therefore, to assume that for these writers the organic cause in some cases may be acquired after birth. In the present discussion the term "organic or physical cause" is used to refer to hereditary, congenital, or acquired organic factors, singly or in combination.

need to be demonstrated before one could make any specific and testable statements about the possible inheritance of any bodily characteristic responsible for stuttering. What a child inherits is a body, and specific bodily parts. If there is a physical characteristic with which some children are born that will cause them to stutter later, then it should be possible to demonstrate the existence of this physical characteristic and so to predict which six to ten infants out of any 1,000 will stutter sometime after they become old enough to talk. No one is able to make such a prediction, however, by means of any known test or examination procedure. In fact, it is impossible by means of physical examination methods alone to pick out the six to ten stutterers in any chance group of 1,000 adults.

Does stuttering run in families? In the Johnson onset study (Study I) of stuttering and nonstuttering children, there were 46 sets of parents in each group. Of the stutterers' parents, one father and two mothers were stutterers, and four fathers and three mothers had been stutterers; of the nonstutterers' parents, two fathers and no mothers stuttered, and no fathers and one mother had formerly stuttered. Of 58 siblings of the stutterers, nine were stutterers and three were former stutterers; of 36 siblings of the nonstutterers one was a stutterer. Fifteen of the 46 stuttering children and four of the 46 nonstuttering children were said to have one or more stuttering relatives.[54]

Of the parents of the 50 stuttering and 50 nonstuttering children in the Darley onset study, Study II, eight fathers and four mothers of stutterers, and three fathers and one mother of nonstutterers, had once been or were at time of interview considered to be stutterers. Nine of the stutterers' fathers and four of their mothers, and five of the nonstutterers' mothers, reported having stuttering siblings. Of the 50 stuttering children, four had one sibling who one parent thought was a stutterer; in two of these four cases both parents agreed that the siblings stuttered; one parent, but not the other, regarded a sibling of one of the nonstuttering children as a stutterer. In 26 of the stuttering group families and in 21 of the nonstuttering group families, at least

[54] *The Onset of Stuttering, op. cit.*, part I.

one parent knew of at least one stuttering relative.[55] Other studies also indicate that stutterers tend to have somewhat more stuttering relatives than nonstutterers have.[56]

Such figures do not, in themselves, constitute direct evidence that stuttering is inherited. Nor is it simply a question of how large or small such numbers, or the group differences with respect to them, are found to be. The fact is, to a limited extent stuttering does tend to run in families. The question is not simply to what extent, but why to any extent at all?

There are two main reasons, of course, why characteristics run in families. One is biological, genetic, hereditary, in a physical sense of the word. We take for granted that this is the kind of reason which accounts for family resemblances in respect to hair color and texture, eye color, and other bodily features.[57] The other reason is social—custom, tradition, training.[58] For example, the Mormon religion, or the Methodist, or Buddhist, or any other, tends to run in families. We understand, of course, that this is not due to heredity in a biological sense, but rather that it is a matter of family tradition, something taught by parents to their children, and passed along in this way from generation to generation. Thus, we have family traditions with respect to food preferences and dislikes, occupations, literary tastes, political leanings, psychological reactions to illness, ethical and moral tendencies, and attitudes, beliefs, and evaluations generally.

The reason stuttering tends to run in families definitely seems to be a matter of tradition rather than genes. Parents who stutter, or have stuttered, or who have grown up with stuttering brothers and sisters, or parents, or uncles and aunts, or cousins—such parents when faced with the *normally* hesitant early speech of their own children may be expected, in some cases at least, to react somewhat differently from parents to whom stuttering means little more than an unfamiliar word they have seldom

[55] *Ibid.*

[56] Joseph M. Wepman, "Is Stuttering Inherited?", *Proceedings of the American Speech Correction Association* (1935), 5:39–52; and Robert West, Severina Nelson, and Mildred Berry, "The Heredity of Stuttering," *Quarterly Journal of Speech* (1939), 25.23–30.

[57] See William C. Boyd, *Genetics and the Races of Man* (Boston: Little, Brown, 1950), for a general treatment of the mechanics of genetics.

[58] See John J. Honigmann, *Culture and Personality* (New York: Harper & Row, 1954), for a systematic survey and discussion of the relationship between individuals and their cultures.

heard or used. And the way they react to the speech of their own children seems to have a great deal to do with determining whether or not their children will develop the self-consciousness about speech, the doubtings and the tensings, that make for stuttering. What runs in families (in those cases in which something seems to) appears to be a background of experience with stuttering and therefore, a kind of concern, a set of attitudes, and a tendency to deal in certain ways with children who are just learning to talk, and with the *normal* imperfections in their speech. It seems a fair conclusion, and a generally useful one, that these attitudes and training policies in turn tend, to a limited extent, to lead to stuttering in the children of the families in which the attitudes and policies have become traditional.

A fascinating family study may be cited here by way of illustration. It was possible to make a six-generation investigation of this family whom we have called the Simpsons (that is not their real name). We discovered this family in 1939 when six out of seven adults attending the speech program for stutterers in an Iowa town turned out to be Simpsons. At that time we traced the family back five generations and interviewed all the Simpsons who lived in Iowa. We also found out everything we could about the Simpsons who had migrated to Kansas two generations previously. Recently we have studied the new, or sixth, generation of Simpsons.

In the first generation of which we have knowledge, there was a stuttering mother and a nonstuttering father. They had two daughters, one of whom stuttered, and she married a nonstutterer. Her sister, who was a normal speaker, married a stutterer. Among the children in the third generation (third, that is, dating from the first generation we investigated), there were several stutterers and it was in this generation that the family divided, some of the members moving to Kansas, the rest staying in Iowa. In the Kansas branch of the family the stuttering problem all but disappeared. There was one stutterer in the fourth generation and none in the fifth. Meanwhile, in the Iowa branch during the fourth and fifth generations stuttering flourished. One-third of all the children, three out of nine in the fourth generation and eight out of 24 in the fifth, were regarded as stutterers or former stutterers.

We tried first to determine as far as we could why it was that the stuttering problem had dried up, as it were, in Kansas while it had flourished in the same family, with the same ancestry, in Iowa. The only difference between the Kansas and Iowa branches of the family that seemed to provide any basis to account for the difference in the prevalence of stuttering centered on the fact that in Iowa there was one man who functioned more or less as head of the family. He was the one who was consulted by the other members of the family about business deals, marriages, and other important matters. He stuttered quite severely himself and he was convinced that stuttering was hereditary in the Simpson line. He expressed the attitude that stuttering was very undesirable, that parents should watch for it in their children and see that it not be permitted to develop, and by his dominating position in the family group he kept the issue of stuttering alive.

It is of interest that whereas there is usually a ratio of three to five boys to every girl who stutters, in the Iowa branch of the Simpson family there was an equal number of boys and girls called stutterers. Even though in our other research we had found no documented case to show that the problem had been present since the beginning of speech, in the Simpson family most of the stutterers were reported to have stuttered from the time they started to talk. It was as though the parents had hovered over the cradle wondering and watching. Expecting the child to stutter, they had interpreted, or so it seemed, the repetitions and hesitations characteristic of his early attempts at speech as stuttering.

This man whose thinking dominated the Iowa members of the Simpson family was, for all practical purposes, completely unknown to the Kansas branch of the family. His influence was not felt, therefore, in Kansas. This fact seems to provide our most substantial clue to the reason why there was so much stuttering among Iowa Simpsons and so little among those who lived in Kansas.

Beyond this, we counseled the fourth and fifth generation stutterers or their parents in the Iowa branch and shared with them the research findings we had at that time regarding the nature and the onset of the problem. About 20 years later, in the early 1960s, we found out what we could about the speech of the children of the sixth generation. There are 44 children in this

generation in Iowa. Only one of these has ever been considered a stutterer. He is a young boy with a relatively slight problem limited largely to oral reading and apparently related to early experiences with reading in school. Interviews with adults of the fourth and fifth generations indicated that there had been a clear and pervasive change in thinking about stuttering, and, with it, a corresponding change in parental policies and practices concerning the speech of the children.[59]

Is stuttering ever caused by imitation? Imitation in and of itself does not cause stuttering. For example, teachers need have no worry whatever that if one child in a classroom stutters the other children will "catch it" by imitation or in any other way. If there were any tendency for this to occur there would certainly be vastly more stutterers than there are. Actors have been known to play stuttering roles night after night, with intervening rehearsals, for months on end, with no ill effects whatever. Imitating a stutterer will no more make one talk habitually like a stutterer than imitating the call of a moose will doom one forever to sound like a moose at inopportune times.

What does appear to happen occasionally—very occasionally—is that a parent or teacher, overhearing a youngster imitating a stuttering playmate, descends upon the child and makes such an issue of it that a vivid and unfortunate impression is made on the child. It is at least conceivable that he might, as a consequence, develop a preoccupation with repetitions, or hesitations, or whatever the behavior happened to be. It is conceivable, too, that a parent or teacher who believed that stuttering could be acquired through imitation might possibly keep a watchful eye on the child who had done the imitating and begin to detect what she might take to be signs of beginning stuttering in the youngster's normally imperfect speech. In other words, if stuttering ever does develop following imitation it does so for the same reasons that it develops in other cases, as explained above, and not because of the imitation as such.

59 The first phase of this study was reported by Marcella Gray in "The 'X' Family: A Clinical and Laboratory Study of a 'Stuttering' Family," *Journal of Speech Disorders* (1940), 5:343–348; a later report is included in Johnson's *Stuttering and What You Can Do About It* (Minneapolis: University of Minnesota Press, 1961), pp. 82–84; the final chapter is yet to be published.

Why do more boys than girls stutter? For reasons that are not clear, on the average there is a ratio among stutterers of about four boys to one girl. The ratio varies from family to family, it changes some but not much with age level, and it has been reported in general to range from about two to one to ten to one. For example, among the 418 stutterers (2 to 16 years of age) that Bloodstein interviewed professionally over a six-year period at the Brooklyn College Speech and Hearing Center, the bulk of the stuttering cases in that age range seen at the Center in that period, 336 were boys and 82 were girls.[60] On the basis of the findings in Study III of the onset series, such ratios can hardly be explained in terms of disfluency as such since the boys and girls who served as the subjects in the stuttering and the nonstuttering groups could be described as essentially similar in terms of disfluency.[61] Schuell investigated the sex ratio among stutterers and, in addition, attempted to lay the groundwork for a better understanding of it by exploring a large variety of sex differences in growth and development generally, in personal and social adjustments, in speech and language abilities, in diseases and deficiencies.[62] She also investigated possible differences in school and home attitudes and policies toward boys and girls, and considered the general question as to whether social or cultural influences affect boys and girls differently. She noted that the male-to-female ratio among stutterers varies according to the age and educational status of the population studied and according to methods used in obtaining samples and making surveys. She reported that males tend to experience a more severe form of stuttering than females, and that more females than males were found who "outgrow" stuttering.

Dr. Schuell summarizes findings available to her to the effect that, generally, in our culture males develop more slowly than females and are more susceptible to a considerable number of

[60] Oliver Bloodstein, "The Development of Stuttering: I. Changes in Nine Basic Features," *Journal of Speech and Hearing Disorders* (1960), *25*:219–237.

[61] *The Onset of Stuttering, op. cit.*, chap. 8 and pp. 239–240.

[62] Hildred Schuell, "Sex Differences in Relation to Stuttering. Part I," *Journal of Speech Disorders* (1946), *11*:277–298; *ibid.*, "Part II," (1947), *12*:23–38. See also Bloodstein and Sonja M. Smith, "A Study of the Diagnosis of Stuttering with Special Reference to the Sex Ratio," *Journal of Speech and Hearing Disorders* (1954), *19*:459–466; and Schuell, *Differences Which Matter: A Study of Boys and Girls* (Austin, Tex.: Delta Kappa Gamma Society, 1947).

diseases and handicapping conditions as well as personal and social maladjustments. She concludes:

> It is found that teachers, parents, and society generally tend to reward children for submissive and withdrawing behavior (which psychologists and mental hygienists consider indicative of serious maladjustment) and to penalize them for traits of aggressiveness, independence, and assertiveness, which males in our culture are nevertheless expected to develop.
>
> A tenable hypothesis would seem to be that the male child, whose physical, social and language development proceeds at a slower rate than that of the female, encounters more unequal competition, and consequently more frustrations, particularly in relation to language situations, than the female child, and that as a result he exhibits more insecurity, more hesitancy, and more inhibitions in speech. If the frustrating situations are too many, if his speech behavior is compared unfavorably with that of other children, or if he becomes aware of unfavorable reactions toward it on the part of other people, it is conceivable that anxieties and tensions and the overt behavior regarded as stuttering might develop.[63]

It is to be stressed that there is need for more research concerning the sex ratio among stutterers, particularly to establish norms for listener expectations of fluency for boys and girls. Meanwhile, in the absence of substantive data, there are many hypotheses.

Under what conditions does stuttering increase and decrease? Stuttering is like anything else in the sense that, when all is said and done, there are but two kinds of knowledge we can have about it. In the first place, we can know what it is—that is, we can recognize it when we see it, we can describe it more or less clearly, and we can tell the difference between it and other things that might be confused with it by an untrained observer. The other kind of knowledge has to do with its variations, with increases and decreases in its amount or severity, and with the conditions under which these variations occur. This latter knowledge of stuttering is particularly useful because "therapy" or remedial training for stutterers is reduced, after all, to a matter of bringing about those conditions—psychological, physical,

[63] Schuell, "Sex Differences in Relation to Stuttering: Part II," *op. cit.*

social, semantic, emotional, informational, instructional, or whatever—under which the severity of stuttering decreases.

We may begin by considering whether there are any physiological conditions related to variations in stuttering. We have already referred to the essentially negative findings of the large number of studies reviewed by Hill (footnote 39) and of several related investigations, but there may be special interest in certain other studies not yet mentioned. Curtis found that stuttering does not increase as a result of even extremely fatiguing amounts of muscular activity. He had stutterers read test passages every 15 minutes under a control condition of rest and an experimental condition in which each stutterer stepped onto and down from a standard stairstep, in time to a metronome, and the total stepping amounted to climbing to the top of the Empire State Building, down again, and halfway up and down again, in 1¼ hours. The stutterers became very tired indeed, but, contrary to what one would expect on the basis of popular belief, the only change noted in their stuttering was that it decreased slightly.[64]

Love investigated the effects on stuttering of two drugs, nembutal and benzedrine. Under each of two control conditions (no capsule and sugar capsule, or placebo, respectively) and two experimental conditions (capsule containing three grains of nembutal and capsule containing 20 milligrams of benzedrine, respectively), he noted stuttered words during eight successive readings of a test passage by each stutterer. There were no significant mean differences among the four conditions either with reference to total amount of stuttering or amount of decrease in stuttering during the series of eight readings (adaptation effect).[65]

Kent, in a survey of research on the use of tranquilizers in the treatment of stuttering, found indications that tranquilizers as a group do produce "perceptible changes in behaviors associated with stuttering" but that stutterers generally respond to the drugs in about the same way that nonstutterers do. She reports that

[64] James F. Curtis, "A Study of the Effect of Muscular Exercise upon Stuttering," *Speech Monographs* (1942), 9:61–74.

[65] William Robert Love, "The Effect of Pentobarbital (Nembutal) and Amphetamine Sulphate (Benzedrine) on the Severity of Stuttering," in *Stuttering in Children and Adults, op. cit.*, chap. 23.

there is no clear evidence that the changes produced by the tranquilizers result in a significant reduction in stuttering either directly, without speech therapy, or indirectly, in speech therapy with drugs used as an adjunct.[66] In the course of reviewing the literature on medical treatments of stuttering, she noted three articles suggesting a relationship between stuttering and endocrine malfunction but concluded that the speech disorders, as described, were not stuttering.[67] She urges the importance of careful description as opposed to labeling in the study of behavior.

Four research workers at the University of Toronto Department of Psychiatry subjected to appropriate laboratory test the notion, first set forth by L. J. Medune, M.D., that the speech of stutterers is affected by the inhalation of carbon dioxide gas. They administered 30 to 70 administrations of gas to each of 16 stutterers, and their relevant records and observations extended to two months beyond termination of the therapy. No reduction in stuttering was found to result from the gas inhalations.[68]

On the basis of information obtained from a review of the literature and from a questionnaire assessment of current practices, Kent concludes that the question of the "efficacy" of carbon dioxide treatment in stuttering has not been answered "adequately either through research or through the experiences of clinicians."[69]

Stuttering involves varying degrees of muscular tension and at times seeming incoordination, particularly of the muscles directly used in speaking. Various writers in the past have attempted to explain these phenomena by assuming them to be evidence of some sort of "neuromuscular instability," or "stuttering block," or "neural block." A study by Williams has yielded information that is fundamental in this connection. Williams recorded action potentials from the jaw muscles of stutterers and nonstutterers during stuttered and nonstuttered speech and noted various types

[66] Kent, "The Use of Tranquilizers in the Treatment of Stuttering," *Journal of Speech and Hearing Disorders* (1963), *28*:288–294.

[67] Kent, "Stuttering and Endocrine Malfunction," *ibid.*, 197–198.

[68] R. G. S. Arthurs, D. Cappon, E. Douglass, and B. Quarrington, "Carbon Dioxide Therapy with Stutterers," *Diseases of the Nervous System* (1954), *15*:123–126.

[69] Kent, "Carbon Dioxide Therapy as a Medical Treatment for Stuttering," *Journal of Speech and Hearing Disorders* (1961), *26*:268–271.

of differences between them. Differences between the potentials from the two sides of the jaw in the stutterers were of particular interest. Then, by instructing the nonstutterers to move their jaw in particular ways, essentially duplicating the jaw movements of the stutterers during stuttering, he was able to record from their jaw muscles the kinds of action potential "abnormalities" occurring during stuttered speech, including differences between the right and left sides of the jaw. In other words, the seeming irregularities in the stutterers' records turned out to be indicative not of neuromuscular instability but merely of the particular movements of the jaw they were making in the act of stuttering. Moreover, by instructing the stutterers to do their stuttering in more simple and easy patterns, Williams was able to obtain from their jaw muscles the same kinds of action potential records he got from the nonstutterers. Such data, along with the many findings of similar implication previously reviewed, suggest strongly that there is no particular reason for assuming that severity changes in stuttering reflect fluctuations in physiological conditions of some sort.[70]

Common sense prescribes physically hygienic living for persons who stutter as well as for those who do not, but scientific data have not indicated that stuttering tends to be made worse or better by any particular physiological factors, as such.

The conditions that have been found to be most clearly and importantly associated with variations in stuttering are, in general, related to the ways people interact with each other. Reference has been made to Bloodstein's investigations of the conditions under which stuttering is markedly reduced or absent. He obtained data from 204 stutterers concerning their speech experiences under each of 115 types of conditions. He concluded that, in general, stuttering is decreased as anxiety concerning it is reduced and he classified specific conditions, under which such anxiety reduction occurs, under six headings: those involving (1) reduced "communicative responsibility" (as when speaking while alone or to an infant), (2) absence of unfavorable listener reactions, (3) reduced need to make a favorable impression, (4)

70 Williams, "Masseter Muscle Action Potentials in Stuttered and Nonstuttered Speech," *Journal of Speech and Hearing Disorders* (1955), 20:242–261.

considerable change in speech pattern (as when speaking with a dialect or in a very loud voice), (5) accompanying activity (as when speaking in time to walking), and (6) strong or unusual stimulation (as when reading in chorus with others, or in a noisy environment, or when highly excited).[71] Conditions (1), (2), and (3) would seem to involve factors directly diminishing the level of anxiety concerning anticipated stuttering; conditions (4), (5), and (6) appear to involve marked reductions, largely because of some sort of "distraction," in anticipation of stuttering, with attendant reduction in anxiety, since one does not fear stuttering if one does not expect to stutter.

It is also to be said that if stuttering is expected, the more anxious or concerned about it the speaker is, the more he will stutter. Moreover, if the speaker has a fear of stuttering, the more expectation of stuttering he experiences, the more he will stutter. We have defined stuttering as what the stutterer does trying not to stutter again. Any conditions which make for increased anticipation of stuttering, or increased apprehensiveness concerning it, tend to result in correspondingly increased avoidant effort and tensing.

The relevant literature is much too extensive to be fully reviewed here. Probably the most fundamental data yielded by the many investigations dealing with variations in stuttering are those which represent the adaptation effect. Several years ago, Johnson and Knott and Van Riper and Hull discovered that if stutterers read the same passage several times in succession, the average amount of stuttering decreases from reading to reading and they called this decrease in stuttering the adaptation effect or adaptation of the stuttering response.[72] The average stutterer

[71] In addition to the previous references to his work, see also Bloodstein, "A Rating Scale Study of Conditions under Which Stuttering Is Reduced or Absent," *Journal of Speech and Hearing Disorders* (1950), *15*:29–36. The present discussion is based in part on his article, "Hypothetical Conditions under Which Stuttering Is Reduced or Absent," *ibid.*, 142–153.

[72] The original adaptation data reported by Johnson and John R. Knott are to be found in "The Distribution of Moments of Stuttering in Successive Readings of the Same Material," *Journal of Speech Disorders* (1937), *2*:17–19. At about the time of this study Charles Van Riper and Catherine J. Hull made a similar investigation which went unpublished, however, until 1955 when it was included in *Stuttering in Children and Adults, op. cit.*, chap. 8, "The Quantitative Measurement of the Effect of Certain Situations on Stuttering." Part IV of *Stuttering in Children and Adults,* chaps. 8–23, pp. 199–310, is made up of reports of studies of adaptation and other aspects of the general problem of stuttering variability.

has about half as many stuttered words in the fifth reading as in the first reading of a passage under ordinary conditions with one listener. Adaptation of the stuttering response has been found to occur, though apparently not always to the same degree, in the speech as well as in the oral reading of stutterers.[73] The adaptation effect has been shown in several studies to be greater when the same passage is read several times in succession than when a different passage is used in each of several successive readings.[74] Trotter found that adaptation occurs in successive readings of the same passage, and is seen not only in reduced frequency of stuttering but also in decreased severity of stuttering.[75] Adaptation research has extended to the exploration of frequency and distribution of disfluencies phenomena in nonstuttered speech that are comparable to adaptation in stuttering.[76]

Johnson and Knott, in the study cited above, observed not only the adaptation effect but found also that the stuttering which occurred in later readings tended strongly (in about two-thirds of the instances) to involve words previously stuttered in earlier readings; they called this "the consistency effect," the tendency for stuttering to occur consistently on the same words or in response to the same cues or stimuli.[77] The consistency effect has been demonstrated in a variety of forms. As has been noted, the extensive investigations made by Spencer F. Brown (see footnote 34) have shown that stuttering consistently occurs more frequently with some kinds of sounds and words than others. The tendency for stuttering to occur consistently in response to such cues as pencil marks drawn through certain

[73] Edwin Cohen, "A Comparison of Oral Reading and Spontaneous Speech of Stutterers with Special Reference to the Adaptation and Consistency Effects," unpublished Ph.D. dissertation (University of Iowa, 1952); and Parley W. Newman, "A Study of Adaptation and Recovery of the Stuttering Response in Self-Formulated Speech," *Journal of Speech and Hearing Disorders* (1954), *19*:450–458.

[74] See, for example, Arnold Golub, "The Cumulative Effect of Constant and Varying Reading Material on Stuttering Adaptation," in *Stuttering in Children and Adults, op. cit.*, chap. 13.

[75] William D. Trotter, "The Severity of Stuttering during Successive Readings of the Same Material," *Journal of Speech and Hearing Disorders* (1955), 17–25.

[76] H. B. Starbuck and M. D. Steer, "The Adaptation Effect in Stuttering Speech Behavior and Normal Speech Behavior," *Journal of Speech and Hearing Disorders* (1953), *18*:252–255.

[77] *Op. cit.*

words, the colored border distinguishing a specific reading passage, and other discernible characteristics of words or passages or speech situations has been reported by many investigators.[78] In later research it was also demonstrated that once stuttering has been reduced through adaptation in reading a passage several times in succession, there is a tendency for the severity of the stuttering to return to its former level after a few hours. Wischner has called this the spontaneous recovery of the stuttering response following adaptation, borrowing the term "spontaneous recovery" from the field of the psychology of learning.[79]

These three phenomena—(1) adaptation or decrease in the frequency or severity of the stuttering response during oral reading or speaking, (2) recovery or increase in the frequency or severity of the stuttering response following adaptation, and (3) the consistency effect, the tendency for stuttering to occur consistently in response to the same words or other stimuli—have come to be recognized as fundamental aspects of stuttering behavior. A large part of the relatively recent and current research on stuttering is concerned with them. It is particularly revealing to note that in the adaptation effect we have a sort of laboratory model of the improvement process. and we can study it to observe whether improvement is retarded or speeded up under specific conditions (the studies of drugs and fatigue, noted earlier, are illustrative).[80] Just so, the spontaneous recovery effect serves as a kind of laboratory model of what is recognized in the clinic as a relapse; we can subject this also to observation under controlled conditions. These two phenomena are, therefore, not only

78 See, for example, Ella Yensen Fierman, "The Role of Cues in Stuttering Adaptation"; Maribel Hopper Connett, "Experimentally Induced Changes in the Relative Frequency of Stuttering on a Specified Speech Sound"; and Naomi Hunt Berwick, "Stuttering in Response to Photographs of Selected Listeners," in *Stuttering in Children and Adults, op. cit.,* chaps. 16, 18, and 19, respectively.

79 Spontaneous recovery has been the subject of experimentation reported in *Stuttering in Children and Adults, op. cit.,* by E. Leroi Jones, Dorothy Jane Jamison (Williams), and James V. Frick, chaps. 11, 14, and 15, respectively. It has been investigated also by Ralph Leutenegger, "A Study of Adaptation and Recovery in the Oral Readings of Stutterers," unpublished Ph.D. dissertation, (University of Iowa, 1954). Newman, *op. cit.,* found that recovery of the stuttering response following adaptation is similar in oral reading and in spontaneous speech.

80 See Johnson's discussion of the meaning of adaptation and consistency in clinical work, *Diagnostic Methods in Speech Pathology, op. cit.,* pp. 267–276.

of theoretical importance (they suggest that stuttering is a learned response rather than a neuromuscular disorder) but also of practical value especially in remedial training (they may help us understand the basic processes of improvement and relapse).

In a recent study, Lanyon reports partial support of the hypothesis that in stuttering therapy high adaptation and low consistency scores are positively related to improvement, but he points to the need for more reliable measurement.[81] The strengths and weaknesses of various measurements in this context have been the focus of a number of investigations recently completed.[82] Other studies are in process.

Together with the consistency effect, and the well-documented fact that stutterers experience expectancy of stuttering, and anxiety, or concern about it, in conflict with their urge or drive to speak, the fundamental aspects of stuttering discussed above have been the subject of several important theoretical discussions of stuttering in the past few years. In two articles, Wischner has systematically developed an analogy between stuttering behavior and certain kinds of conditioned and learned responses that have been investigated in both human subjects and animals in the laboratories of learning psychologists.[83]

Utilizing a learning-theory frame of reference also, Sheehan has developed in considerable detail a theory in which stuttering is viewed as learned behavior expressive of a conflict between

[81] Richard I. Lanyon, "The Relationship of Adaptation and Consistency to Improvement in Stuttering Therapy," *Journal of Speech and Hearing Research* (1965), *8*:263–269.

[82] Among these are Walter L. Cullinan, "Stability of Adaptation in the Oral Performance of Stutterers," *Journal of Speech and Heading Research* (1963), *6*:70–83; Cullinan, "Stability of Consistency Measures in Stuttering," *ibid.*, 134–138; Quarrington, "Measures of Stuttering Adaptation," *ibid.* (1959), *2*:105–112; Merle W. Tate and Cullinan, "Measurement of Consistency of Stuttering," *ibid.* (1962), *5*:272–283; and Tate, Cullinan, and Ann Ahlstrand, "Measurement of Adaptation in Stuttering," *ibid.* (1961), *4*:321–339.

[83] George J. Wischner, "Stuttering Behavior and Learning: A Preliminary Theoretical Formulation," *Journal of Speech and Hearing Disorders* (1950), *15*:324–335, and "An Experimental Approach to Expectancy and Anxiety in Stuttering Behavior," *ibid.* (1952), *17*:139–154. Following Mowrer (O. H. Mowrer, "A Stimulus-Response Analysis of Anxiety and Its Role as a Reinforcing Agent," *Psychological Review* [1939], *46*:553–565), Wischner includes as an interesting aspect of his theoretical discussion the hypothesis that one of the reasons why the stuttering response continues to recur is that it is followed, after all, by the utterance of the word with attendant reduction in anxiety and tension, and this serves as a kind of "reward" to reinforce the stuttering response that precedes it.

the drive to speak and the drive to avoid expected stuttering.[84] Van Riper has interpreted stuttering in a way that emphasizes the conflict between the urge to speak and the fear of expected stuttering, and the reinforcement of the resultant behavior by virtue of the "release from punishment" involved in finally saying the word.[85] Hill has presented a compact theory embodying features similar to the above, and he has convincingly produced "stutter-like" disturbances in the speech of nonstuttering adults in a laboratory situation designed in accordance with his theory.[86]

It is clear that much fruitful research on stuttering to date has been concerned with conditions under which stuttering varies in amount or severity. It has been much too fruitful, in fact, to be reported fully or even summarized more than very briefly in an introductory text. With the risk of oversimplification that brevity involves, it may be said that what we have so far learned from this research suggests that the more stutterers talk and read aloud, the better, and the more continuously they talk, the better.

The writer prefers the theory that stresses anxiety deconfirmation in explaining either the adaptation effect or improvement in the ordinary sense. That is, the things we anticipate with dread or uneasiness we tend to exaggerate; when we actually experience them we discover that they are not as bad as we expected them to be. Our fear of them is correspondingly "deconfirmed" in some degree and therefore weakened. So it appears to be in the case of stuttering behavior. It is anticipatory. To the degree that the stuttering and its consequences, as experienced, turn out to be less fearful than anticipated, the stutterer's anxiety is deconfirmed. With less intense anxiety, he is subsequently less

[84] Joseph G. Sheehan, "Theory and Treatment of Stuttering as an Approach-Avoidance Conflict," *Journal of Psychology* (1953), *36*:27–49. Sheehan develops the proposition that the conflict involved in the act of stuttering is resolved by virtue of the fear-reducing effects of actually performing the stuttering after having built up fear in anticipation of stuttering. An earlier version of a conflict theory of stuttering is to be found in Johnson and Knott, "The Moment of Stuttering," *Journal of Genetic Psychology* (1936), *48*:475–480.

[85] Van Riper, *Speech Correction Principles and Methods*, 4th ed. (Englewood Cliffs, N.J.: Prentice-Hall, 1963), chap. 11.

[86] Harris E. Hill, "An Experimental Study of Disorganization of Speech and Manual Responses in Normal Subjects," *Journal of Speech and Hearing Disorders* (1954), *19*:295–305.

apprehensive about stuttering on the words he has to say, less concerned about avoiding the stuttering he does anticipate, and so does less to avoid it and with less tensing. As he gradually learns that, in general, his expectations of trouble are exaggerated, he will be inclined to talk more. Then, the more he talks, the less he stutters; and the less he stutters, the more he talks. As a kind of bonus, the anxiety-deconfirmation tends to be essentially self-increasing so that the more he talks the more he talks, and the less he stutters the less he stutters.

ONSET AND DEVELOPMENT OF STUTTERING

As we have seen in the preceding pages, scientific findings to date, considered together with general clinical observations, indicate that stuttering is to be most usefully and meaningfully regarded not as a symptom of a physical flaw or instability, nor as a symptom or outward effect of a basic "nervousness" or "neurotic personality structure," but rather as a form of behavior that is learned. So far as we can tell, then, any child might learn to stutter, provided he is placed in the proper circumstances and handled in such a way as to create in him the necessary specific anxieties and tensings. A person may be too paralyzed or too severely brain-injured to stutter, or too drugged, or exhausted, or psychotic, to be sufficiently responsive to other people to stutter to them. In general, aside from such considerations, and so far as we know, no particular type of body or personality is essential to stuttering.

It is to be considered, of course, that children may differ with respect to their allegedly congenital, or trained "readiness," or "predisposition" to stutter, or their "aptitude" for cultivating the anxiety and tensing peculiar to stuttering, although we must bear in mind that these terms stand for possible and obscure inferences rather than facts that we have observed. We find it very difficult to use such terms in statements that we can test by making observations. In the meantime, with the facts at hand there is much we can say and do that seems advantageous.

Conditions under which stuttering begins Generally speaking, the onset and development of stuttering can be stated as

follows: as we have noted in some detail, beginning speech is normally disfluent, more disfluent in some children than in others, more disfluent or less disfluent in the same child from one day to the next or from one situation to the next. This does not mean that all children stutter. It is simply that all children speak disfluently in some degree; so do all adults. Stuttering is something else again. To say that all children "go through a stage" in which they speak hesitantly and repetitiously is not entirely right either. Repetition, as we have seen, starts with the birth cry and continues throughout infancy. It does not stop when the child begins to say words. There is really no "stage" that the child goes through. It is simply that speech follows a course of development. Throughout this course there is some amount of disfluency.

As we have seen, in most homes, particularly those in which no one has had any personal experience with stuttering, the normal disfluency and normal fluctuations in the fluency of beginning speech appear to be almost completely disregarded. The basic question is not so much what causes some children to stutter, but rather what causes an occasional parent to cultivate the attitudes and policies that tend to make him dissatisfied with his child's speech fluency, and to worry about it, and react to it in ways that influence the child to become uneasy and tense in speaking.

The reasons for the onset of stuttering, then, are not to be sought most significantly within the child or even in the way he speaks, but primarily in the parent's attitudes and reactions to the child, and especially, to the way the child speaks. The point not to be missed is that any child speaks with enough disfluency and normally shows enough variation in his level of fluency, from day to day, to be worried about and diagnosed as "stuttering," provided his parents are prepared, by their conditioned attitudes, beliefs, and standards, to worry enough and to see simple repetitions and hesitancies or changes in fluency as danger signals. Parents differ amazingly in this general respect. Any one parent, moreover, fluctuates, sometimes greatly, with regard to the way he evaluates and reacts to the speech of any one of his children, or of his two or more different children. Circumstances vary, competing sources of concern shift about, distrac-

tions of all sorts arise and subside, and the total impression made by a child at one time differs markedly, for changing and complex reasons, from the impression made by the same child on the same parent at another time. What may be unnoticed one day may be perceived as "stuttering" the next and disregarded again a week later.

Almost any parent of a supposedly stuttering child will say, sometime during a clinical interview, "He's better sometimes than others. He may go for a day, or even several days, without one bit of stuttering, just talking perfectly, and then he stutters again." One suspects, on the basis of all we know about stuttering, that as a rule such a parent is describing not so much his child's normal disfluencies and fluctuations in fluency as his own wavering attention to these and concern over them. He is like the man who dozed on and off during a long committee meeting and reported later that in his judgment the committee chairman was incompetent and a bit queer to boot: he talked incoherently by fits and starts.

Tuthill has shown how widely individuals differ and how very inconsistent any one person can be in using the word "stuttering" to label actual speech phenomena. He made phonograph and sound film recordings of the speech of stutterers and nonstutterers, and asked listeners to mark, on mimeographed copies of the material, the words which they judged as stuttered. His listeners included laymen, students with training in speech pathology, stutterers, and professional speech pathologists. All groups showed about the same degree of disagreements as to which specific words were stuttered and which were not, regardless of whether they only heard, or both saw and heard, the speakers, and the disagreement was indeed astonishing. In fact, there was on the average, only about 37 percent of perfect agreement. Each listener, moreover, heard the recordings twice, about a week apart, and the relatively low average degree of self-agreement was also impressive.[87] Tuthill's findings, together with all the other available information bearing on the point, make it very plain that what one person would call "stuttering" another might call perfectly normal speech and that what a par-

[87] Curtis E. Tuthill, "A Quantitative Study of Extensional Meaning with Special Reference to Stuttering," *Speech Monographs* (1946), no. 1, *13*:81–98.

ticular person would call "normal" at one time he might label "stuttering" at another.[88]

This helps greatly to account for the fact that not all children in a given family are regarded as stutterers, and that almost all parents report that what they call stuttering "comes on gradually," "for no apparent reason," and that it tends to "come and go," especially during the early period of its development. According to some parents, of course, it "starts suddenly" and, while the child "has more difficulty sometimes than others," he is "never" entirely free of it.

The statements above refer to reports made by parents interviewed soon after they have diagnosed their children as stutterers. It should be most strongly emphasized that case history data concerning the onset of stuttering, obtained either from adult stutterers themselves or from stutterers' parents, any considerable period of time after the supposed onset of stuttering, are likely to be very unreliable, even extremely and systematically distorted. In Study II of the onset series the average discrepancy between ages of onset of stuttering as given by mothers and fathers independently was 15 months![89] Memory for such long past events tends to be not only vague but confused, and to reflect the personality conflicts and tendencies of the informant fully as much as the facts themselves. Competent case history interviewers insist upon meticulously detailed time-and-place documentation of any statements about the onset of stuttering, and as a rule, such documentation simply cannot be obtained unless the history is taken soon after the onset has occurred.

To summarize, investigation of the onset and early development of stuttering has shown that: practically all stutterers are

[88] When confronted with a series of 12 two-minute samples of the recorded speech of young stuttering and nonstuttering children, parents who had previously come to regard their own children as stutterers were found by Bloodstein and his students to make more diagnoses of stuttering than parents who had not diagnosed their own children as stutterers. See Bloodstein, William Jaeger, and Jack Tureen, "A Study of the Diagnosis of Stuttering by Parents of Stutterers and Non-stutterers," *Journal of Speech and Hearing Disorders* (1952), *17*:308–315. The problem investigated by Tuthill has been further explored by Richard M. Boehmler in "Listener Responses to Non-Fluencies," *Journal of Speech and Hearing Research* (1958), *1*:132–141. See also Williams and Kent, "Listener Evaluations of Speech Interruptions," *op. cit.*

[89] *The Onset of Stuttering, op. cit.*, part 1.

originally diagnosed (regarded as "stutterers") by laymen, not speech specialists, usually by their parents, more often than not the mother; what these laymen diagnose as stuttering is chiefly the normally disfluent speech of childhood; the parent diagnosis is usually made when the child is between 2 and 4, that is, when he begins to talk enough to call attention to what he is saying and how he is saying it; practically all children diagnosed as stutterers have spoken for from six months to several years without being regarded as "defective in speech"; so-called stuttering children are, in general, normal children, physically and mentally.[90] Stuttering as a definite problem occurs, not before being diagnosed, but *after being diagnosed.* In order to emphasize this finding, the writer has coined the term "diagnosogenic"; stuttering is a diagnosogenic problem in the sense that the diagnosis of stuttering is one of its causes.[91]

What this means essentially is that once the parents have persuaded themselves that the child's speech is disordered, that he is a stutterer, they do not react with calm indifference. Their concern, vague and mild before, perhaps, now has a disturbing name, "stuttering" (or any equivalent), and all the alarming and depressing implications of such a name, upon which to feed. Their worry becomes intensified. One who has not dealt intimately with such parents would doubtless find it all but impossible to appreciate the heightened sensitivity with which they sometimes come to listen for any sign of "stuttering" in the child's speech so that even when it is normal by any ordinary standard, to them it is disturbingly "defective." Moreover, they tend to generalize their anxieties beyond the child's speech: in their distress he seems now to be somehow "nervous," "unstable" perhaps, "defective in some way," the "victim of bad heredity."

[90] The statements made here are based for the most part on the three studies in the onset series reported in *The Onset of Stuttering, op. cit.; Stuttering in Children and Adults, op. cit.,* pp. 51–62; A. C. La Follette, "A Study of the Parental Environment of Stuttering Children," unpublished Ph.D. dissertation (University of Denver, 1948); and J. P. Moncur, "Parental Domination in Stuttering," *Journal of Speech and Hearing Disorders* (1952), *17*:155–165.

[91] A similar concept is presented by Frank R. Drake in an intriguing article, "The Iatrogenic Factors in Illness," *American Journal of the Medical Sciences* (1948), *215*:103–107. An iatrogenic disorder, according to Dorland's *Medical Dictionary,* is one that is "induced in the patient by autosuggestion based on the physician's examination, manner, or discussion."

He has "something wrong with him." And running through it all is a furtive and distracting bewilderment: "Why did this have to happen to *us*?"

Few such parents, of course, show these reactions outwardly in any sort of agitated behavior. Most of them protest that they "never let on to the child." Closely questioned, however, they reveal, as the previous quotations from Study II indicated, that, for all their efforts to "do nothing" and to be outwardly calm, they show their anxieties in countless ways—from postural tensions, facial expressions, vocal inflections, ways of looking or not looking at the child when he speaks; through restrained or casual attempts to help the child, suggestions that he speak slowly or "take a breath," or "stop and start over," or "take it easy," subtle or outright apologies or "explanations" to guests and relatives and friends, discussions—guarded or not—about "the difficulty" in the child's presence; to, in occasional instances, sterner measures, rarely brutal of course but always disturbing, in the way of "discipline," varying from insistence upon the child's "not stuttering that way" to punitive actions. The effects are seen in the child's slowly developing self-consciousness; occasionally, of course, the undesirable effects are sudden and marked, depending upon circumstances and incidents. As the child takes on the parent's anxieties and tensings and begins to react in terms of them, the normal disfluencies in his speech tend gradually to become transformed into more aggravated and strained hesitations or stoppage reactions.

Classifying a child as a stutterer So long as a child shows no anxiety and no particular tensing with respect to his speech disfluencies, certainly nothing is to be gained by calling him a stutterer. So long as the child is accepted by his parents, friends of the family, neighbors, and his own friends and playmates as a normal speaker, one should make no move to disturb this acceptance, which is highly important to his speech development. If the child feels insecure or hesitant about his speech, one should, as a matter of course, attempt to remove or modify any conditions that aggravated or intensified those feelings. In doing this, however, one should avoid calling the youngster a stutterer

just as one should avoid encouraging others by any means to look on him as "abnormal" or "defective" to no point and for no solid scientific reason. An actual case will help to illustrate what is meant.

. . . Jimmy . . . as a pupil in the grades was regarded as a superior speaker. He won a number of speaking contests and often served as chairman of small groups. Upon entering the ninth grade he changed to another school. A "speech examiner" saw Jimmy twice during the one year he spent in that school. The first time she made a recording of his speech. The second time she played the record for him, and, after listening to it, told him he was a "stutterer."

Now, if you can remember the first time you tried to speak into a speech recording machine you can understand what seems to have happened. In the studies referred to previously all the children spoke with hesitations, repetitions, "uh-uh-uhs," etc. It is easy to see how the apparently inexperienced examiner misjudged Jimmy who was, after all, a superior speaker as ninth graders go.

He took the supposedly "expert" judgment to heart, however. The examiner told him to speak slowly, to watch himself, to try to control his speech. Jimmy's parents were quite upset. They looked upon Jimmy's speech as one of his chief talents, and they set about with a will to help him, reminding him of any little slip or hesitation. Jimmy became as self-conscious as the legendary centipede who had been told "how" to walk. He soon developed tense, jerky, hesitant, apprehensive speech–the kind that a speech pathologist would call stuttering in the clinical sense of the word.[92]

Before a child is classified as a stutterer full consideration should be given to the purposes to be accomplished by so classifying him. In what way and to whom will this be beneficial? For practical purposes of thinking constructively about this matter it is helpful to group children in the following way:

First, there are children whose speech is normally disfluent to the degrees and in the ways that we have previously discussed. They exhibit no tensings or signs of uneasiness in their hesitancies, pauses, and repetitions. Nobody is concerned about them. It is not useful to think of them as "passing through a stage" of being disfluent or of "stuttering," and they need not

92 Johnson, in "An Open Letter to the Mother of a 'Stuttering' Child." See Appendix VII.

be regarded as "primary stutterers."[93] There appear to be clear advantages in thinking of them as normal children so far as their speech is concerned.

Second, there are occasional youngsters who may or may not be more disfluent than other children but who seem to be somewhat more tense and more "bothered" than most by those disfluencies. Such children, however, are decidedly different from representative adult stutterers as far as the tensings and emotional reactions involved in their disfluencies are concerned. Moreover, they have not developed the adult stutterer's fixed and elaborate attitudes, interests, specific habits, and general behavior patterns around the disfluencies or as a reaction or adjustment to them. One is tempted to say that these children are more sensitive than others and that they, therefore, are more disturbed by parental disapproval. So far as we know, research data do not support this assumption. It seems to be the fact that practically any child of preschool age or in the lower grades is sufficiently sensitive or responsive to his parents' disapproval of his disfluency to react in ways conducive to the development of the problem called stuttering.

The child who is unusually bothered by his disfluencies, while not yet possessed of all the characteristics of an adult stutterer, and while still changeable and very responsive to good influences, does present a problem. It may do no good, and it can make matters worse, to label his speech "stuttering." The question here is not whether the child *really is* stuttering or *really is not* stuttering; the question, to be answered as well as possible in each individual case, is: what difference will it make to say he is stuttering? Will it help him and his listeners or will it not? What, in effect, will or can be done if the label of stuttering is used that won't or can't be done if it is not?

Third, there are children whose speech behavior is clearly different from that of children in either of the two groups we

93 Problems centering around the varying usages of the terms "primary" and "secondary" stuttering are dealt with by Philip J. Glasner and Frana Dahl Vermilyea in "An Investigation of the Definition and Use of the Diagnosis, 'Primary Stuttering,'" *Journal of Speech and Hearing Disorders* (1953), *18*:161–167. Bloodstein also discusses these problems in "The Development of Stuttering: III. Theoretical and Clinical Implications," *Journal of Speech and Hearing Disorders* (1961), *26*:67–82.

have just discussed. They present considerable disfluency. Their hesitations and repetitions are tense and accompanied by obvious associated movements or grimaces. They are avoiding certain speech situations, substituting words, perhaps, and are in general more like adult stutterers. There are various signs that they themselves have taken on the problem emotionally and are being adversely affected by it. Their parents, relatives, friends, and teachers take it for granted that they are stutterers. They think of themselves as stutterers. It would be plainly impractical, and doubtless confusing to all concerned, including the child, to attempt to say that he is not a stutterer. In such a case the advantage nearly always lies in accepting the label and in being matter-of-fact in dealing with the problem as stuttering.

Classification, then change A central consideration for speech clinicians and classroom teachers is the fact that once a child has been diagnosed or classified as a stutterer, his behavior and the behavior of his listeners tend to become modified, often in very subtle ways. The listener who has said that the child is stuttering will have affected his own perceptual set so that he is more likely than before to notice the child's hesitations and repetitions and regard them as "stuttering." Moreover, there is a kind of contagion about this perceptual set for it spreads from person to person, from parent to parent, to teacher, to neighbors, to friends, to relatives. Each person it touches is changed as a listener. The child will be speaking to the same people but now they are different listeners. They listen with a different manner, a new look on the face, a different posture.

The child senses these changes. He begins to act as though he had come to feel that it is not as much fun or as easy as it once was to talk to these people. And so his speech becomes less spontaneous, his listeners become more concerned, and the problem called stuttering enters the lives of its several members in ways diverse and various.

All this happens, of course, unless somebody along the way changes the nature of that contagion. It is to the purpose of effecting this change that remedial speech work, our final subject in this chapter, is directed.

REMEDIAL TRAINING FOR STUTTERERS

It is highly desirable for anyone, particularly the speech clinician and the classroom teacher, to feel something in common with the stuttering child. To be able to put oneself "inside his skin" and see the problem as he sees it is just about the most important prerequisite to any kindly, wise, and effective approach to helping him. To be able to say to him, and to mean it, "I know how you feel," is to establish a bond with the child that will work its beneficent magic in a thousand subtle ways day in and day out.

Notion of problem An important first step toward achieving even a measure of sympathetic understanding is to make the *notion of problem* come as fully alive as you can in your own personal terms. Toward that end, it will be helpful to review the initial presentation of *notion of problem* in the section called "What Is a Speech Problem or Impairment or Disorder?" in Chapter One and then to rephrase the central idea in terms of our present discussion. We find we can say, then, that the problem called stuttering has three main components which may be

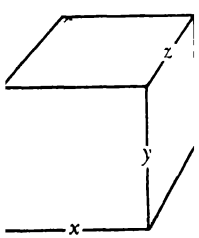


Figure 9. Diagram of a speech problem: x = the speech characteristic; y = listener reactions; z = speaker reactions.

visualized, as in Figure 9, as the three dimensions of that problem: (1) the behavior called *stuttering* (x in Figure 9); (2) *listener reactions* to this behavior and to the speaker who exhibits it (y); (3) *speaker reactions* to listener reactions and to his own feelings about his behavior that is called stuttering and about himself as a person (z).

Now think of one of your own characteristics, or perhaps something you call an undesirable habit. Do you think of yourself as

"too tall," or "too short," or "too fat," or "not good looking," or "not intelligent enough," or "awkward," or "not a good dancer," or "short-tempered," or "impolite," or "crude"?

Pick such a characteristic and then think about the problem you have, or make for yourself, with it or around it. With deliberation, look at the characteristic itself (the *x* dimension of your problem). Think how others react (the *y* dimension) to that characteristic and to you. Observe how you react (the *z* dimension) to their reactions, to yourself as a person, and to your problem characteristic. Try to develop a mental image or a diagram of the "shape" that these dimensions give to your problem. Then ask yourself the basic questions suggested by the *notion of problem.*

1. Can you do anything about the problem by changing the characteristic itself (*x*)? For example, if you feel you are "too tall" can you make yourself shorter? If you think you are "tactless" can you behave more tactfully? Obviously, what and how much you can do about the problem by changing the characteristic depends in great part on the nature of the characteristic.

2. Can you do anything about the problem by trying to get other people to change the way they react to the characteristic and to you? If you are "too tall," and people react with concern to your tallness, and to you as a person because you are "too tall," can you lessen their concern by being rather matter-of-fact about tallness, by accepting tallness with a certain amount of grace? Will it be helpful if you welcome the chance to discuss tallness with them, and with teachers, and others who minister to the "needs of people like you," perhaps with the general public at meetings of organizations, or through letters to the editor, even by radio or television if you have access to these? Is it not safe to assume that people will react with less concern if you are matter-of-fact about tallness and with more understanding as they understand more? Those would be ways in which you could do something about your problem through changing the reactions of others to your problem characteristic and to you. So you would be able to answer the second basic question in the affirmative.

3. Can you do anything about the problem by changing your own reactions to others, to yourself, and to your characteristic

(z)? If someone laughs at you because you are "too tall" will it help to talk to him, expressing your resentment "openly and honestly"? Is it a good idea to laugh with him "at yourself"? Is there anything to be said for quiet dignity? A sense of humor? Or the attitude "I am what I am and you can like it or lump it"? Will most people try to be more helpful to you if you try to be more helpful to them? Will they respond more warmly to your needs if you make an effort to be understanding, appreciative, and considerate of theirs? In making that effort, are you not, in fact, already doing something about your problem? Once you have come to understand the problem of your friend who is "too short," for example, will you not in all likelihood react to him with more consideration, to yourself with more understanding, to your tallness with a better sense of the relative importance of things than you did before? And doesn't this add up to problem-solving behavior and hence to an affirmative answer to this third basic question? It seems clear that you can do something about the problem by changing your own reactions to others, to yourself, and to your characteristic.

In working through to the answers of these questions you have had an opportunity to make the *notion of problem* come alive for you in your own personal terms but mainly as that notion relates to behavior problems in general. So now you will find it helpful to repeat the exercise with a new cast of characters in order to particularize the notion to the problem called stuttering.

This time, the characteristic within the problem will be the kind of speech behavior that is called stuttering. You will be the speaker; but you are now a young child and your teacher says you are beginning to stutter. You don't know exactly what she means except that it seems to be something that bothers her now and then when you're trying to tell her something. She has talked to your parents and they seem bothered, too. You've tried to please all of them by speaking more clearly or talking more slowly when they've asked you to, but about all that has happened is that they still are unhappy and so are you.

Now, still as this baffled child, look at that first basic question —and the second—and the third. How can you answer questions like those when everything is blurred, and vague, and formless,

except your feeling of bafflement? You can't, of course, at least not in the way you did when you were your own adult self and your problem was tallness. Now that you are a child, you visualize no Figure 9. You have no clear-cut, problem-solving, *x-y-z* concept of what is happening. Who can help you? How?

As you leave the troubled child and become yourself again, retain as well as you can the feelings that were yours when you were "inside his skin." They are part of your growing understanding, of your new *notion of problem;* they will be rewardingly useful to you throughout your professional life. In the present situation, too, they will help you to a new appreciation of the advantages to be discovered in thinking of stuttering as a problem.

Listeners and listening We cannot look at a child's problem called stuttering without being aware that some of his listeners are more important than others and that, however he speaks, they will react in various ways to his speaking, and to him. These reactions may range from acceptance to rejection, from approval to disapproval, from reassurance to anxiety, from friendliness to hostility. In our review of the literature we have noted that among the factors that may enter into these reactions are the age of the child; the sex of the child; the listener's knowledge of, interest in, and preferred theoretical explanation of stuttering; the socioeconomic level and perhaps the upward socioeconomic mobility of the listener; the degree of importance which, for any reason, the listener attaches to the fluency aspect of the child's speech; and the complexities of interpersonal relations and reactions.

We recall that the listener who first makes the judgment that the child is stuttering is the one who first experiences the problem. He or she remains the only member of the problem until others agree that the problem exists. When one parent is the first member of the problem the other parent as a rule rather quickly becomes one, too. It is later that the child becomes a member of the problem in a significant sense.

It becomes obvious that listeners and listening become important considerations in understanding the problem and in working on its solution. Listening is part of a relationship, a

cooperative relationship, when it is at its best. Members of the problem, especially the important members—the parents, the clinician, the classroom teacher, the favorite playmates, the aunts and uncles and cousins—will help the speaker if they are good listeners.

The good listener is usually relaxed. He seems to be listening thoughtfully. He is responsive but not distractingly responsive. He seems to be listening as though he wanted to hear everything. His first obligation, of course, is to keep the speaker talking. And when he does this, he will be performing one of the most important services possible for the stuttering child because he will be encouraging that child to do the thing he most needs to do, that is, to talk.

The good listener seems to listen with a certain kind of manner, or attitude, or feeling tone, or even posture, a kind of intention. Williams and Roe have brought this into focus in the parallel they see between the learning behavior and personal reactions in stuttering and the learning behavior and personal reactions in a simple schoolroom task such as coloring.

> If the child feels that someone will be "bothered" if the crayon slips beyond the line, he is likely to tense his entire body, to grip the crayon with a white-knuckled fist, and to try so hard to avoid going outside the line that he will be incapable of coloring easily and spontaneously. . . . Instead of considering that something is wrong with the child, the teacher would meet the situation with a calmness that is contagious and a directness that is disarming. She reflects to the child in many subtle ways a point of view toward . . . coloring that encourages the child to accept mistakes as part of the game of learning to do things—as part of the task of growing up.[94]

The good-listener attitude and the *notion of problem* combine to suggest that the logical approach to any plan of therapy or remedial training is an analysis of the various kinds or dimensions of improvement that are possible for the child and that would be advantageous to him. Once we are fairly clear about the particular kinds of improvement a given stutterer might best try to achieve, we have a good basis for thinking about the procedures that he—and we—might use in order to bring about

[94] Williams and Allison M. Roe, "Teachers, Parents, and 'Stutterers,'" *Education* (1960), *80*:471–475.

these particular kinds of improvement. And we can also think clearly, then, about the basic question of what in general should be done first, and what next, and what should probably not be attempted until rather late in the retraining program, because some kinds of improvement are basic and tend to make other kinds of improvement more readily attainable.

Moreover, at the same time that we are working out our analysis of the retraining problem in these terms of the possible dimensions of improvement, we shall find it useful to consider that certain of these dimensions or kinds of improvement are as clearly indicated or desirable from one theoretical point of view as from another. For example, whether we believe that the stutterer does whatever he may do as a stutterer out of biological or neurophysiological necessity, or that he does it out of some deep-lying emotional or motivational need, or that he does it because he has learned to do it as a habit—that is, as a conditioned or reinforced response to the cues or stimuli with which the doing of it has come to be associated—doubtless we agree that it is to the stutterer's advantage to improve certain aspects of his personal and social adjustment and to accomplish certain of the specific changes in behavior and attitude that we shall presently be considering. To say that a stutterer might gain by improving his personality adjustment by no means implies that he is now necessarily "maladjusted" or "neurotic." If he were to undertake to sell insurance, for example, he would be likely to be enrolled by the insurance company in a course of training designed in part to "improve his personality" even though he might be "well-adjusted" when first employed. Just so, if he is to undertake to acquire better speech behavior, he might very well, no matter how "well-adjusted" he may be in a general sense, increase his chances of success if he were to accomplish certain kinds of improvement in adjustment. It will also be clear, of course, that some of the types of improvement we shall be considering are more definitely indicated as necessary or desirable from one theoretical point of view than from another. After all, regardless of how clear-cut or unclear about it we may be in our own minds, we do operate with some theory or other about stuttering; the particular theory we favor does influence us in the decisions we make as to what to do from moment to

moment as we work with stutterers. It would seem desirable, therefore, to be as clear about our theories—our fundamental assumptions about what stuttering involves and what factors or conditions "cause" it or affect the severity of it—as we can be with the dependable knowledge that is currently available to us.

Possible dimensions of improvement The problem called stuttering has several aspects for the particular child or adult who stutters, and some of these will be more severe, or more important, or more susceptible to improvement than certain others. The practical significance of this fact is that for any stutterer there are as many kinds of desirable change, as many kinds or dimensions of improvement, as there are notable or significant aspects of his total problem. We shall proceed by listing, with only brief comment, the more important of these aspects, and then we shall give attention to (1) those kinds of improvement that are of particular interest and practical importance to the classroom teacher, and (2) those additional dimensions of improvement that are in most instances of specialized interest and significance to the professional speech clinician.

What follows is a list of eight major aspects stated in such a way as to indicate corresponding kinds of changes or improvements. The list can be used as an outline in working with a particular stutterer. In using it in this way, the teacher or speech clinician should attempt to obtain the information that will make it possible for her or him to rate each aspect of the problem by underlining one of the five terms (no difficulty; slight; moderate; marked; very marked difficulty) alongside each of the eight major headings in the list.[95] This should be done as early in the retraining period as possible, and new ratings should be made for comparative purposes at the end of retraining. Under each major heading there are subheadings which are intended to serve as

[95] The relevant information needed to make these ratings or judgments may be obtained in many ways, of course, some simple, others elaborate, and the thoroughness as well as the precision with which it is obtained must necessarily be adapted to the time available, the technical means at hand, one's training and experience, and the circumstances under which one works. Several interview procedures, tests, and special rating forms are to be found in *Diagnostic Methods in Speech Pathology, op. cit.* Ordinary observation, questioning, and gathering of relevant information from parents, teachers, school records, and other available sources are, of course, the main procedures used by teachers and speech clinicians in this connection.

guides to a further breakdown or analysis; this breakdown, in turn, amounts to a listing of the possible changes or kinds of improvement that might be undertaken.[96]

I. Speech (aside from stuttering): no difficulty; slight; moderate; marked; very marked difficulty.
 A. Degree to which speaking is enjoyed in general, and in specific situations that occur often or are otherwise important for the particular individual.
 B. Strength of the individual's "communicative drive"; proportion of the individual's experiences in speaking that he evaluates as successful. Degree of the individual's interest in the listeners to whom he is speaking.
 C. Quality of speech aside from stuttering. Correctness of speech sound articulation, quality of voice, and expressiveness.
 D. Degree of interest in, feeling for, or appreciation of good speech. Degree to which the individual admires effective speakers and enjoys listening to them. Tendency to be curious about language and problems of meaning. Degree to which he likes to say things well, to make his statements clear and dependable, and to interpret as best he can the meanings of material that he reads aloud.
 E. Speaking time. In general, is the stutterer very talkative, rather quiet, or about average in comparison with others his own age?[97]

II. Stuttering: no difficulty; slight; moderate; marked; very marked difficulty.
 A. Severity of stuttering.[98]

[96] The very considerable contribution of Dr. William Trotter to the development of this method of analyzing and evaluating a stutterer's problem is gratefully acknowledged.

[97] According to our general observations, the average college student probably talks—solid speaking time, that is—about 45 minutes a day. We try to get stutterers of comparable age to talk at least an hour or so per day. It is to be appreciated that a child's verbal output varies greatly from one situation to another, of course. A speaking-time record form and instructions for its use are to be found in *Diagnostic Methods in Speech Pathology, op. cit.*, pp. 214–219.

[98] Procedures for evaluating severity of stuttering and attitudes toward stuttering are given in *Diagnostic Methods in Speech Pathology, op. cit.*, pp. 259–264 and 281–287.

1. Frequency (percentage of words spoken or read). One can actually count stuttered words during oral reading or in tape-recorded speech, of course, but speech clinicians who are too busy to do this will prefer to estimate the percentage of stuttered words. They should practice marking stuttered words during oral reading, however, before making such estimates in order to avoid the common tendency to overestimate.
2. Degree of tension involved in stuttering reactions.
3. Duration of stutterings.
4. Complexity of stuttering reactions—the number, variety, and patterning of the grimaces, eye-closures, lip-puckerings, extraneous vocalizations, holding of the breath, bodily movements, and so forth.
5. Attitude toward stuttering. This may range from an emotionally charged intolerance of stuttering, a refusal to face it, and a tendency to run away from it, to calm and objective acceptance of it, and interest in it as a fact to be observed and understood, and as a problem to be worked on as conscientiously and effectively as possible. The attitude is revealed in degrees of willingness to talk about the problem and the sorts of statements made about it. It is shown also in evident degrees of embarrassment, as well as in the strength of the desire to avoid stuttering, and to avoid situations and personal relationships that involve or might involve stuttering. It is revealed in the extent to which the stutterer has sought information about stuttering from books, teachers, doctors, and other possible sources of such information, and in his response to opportunities to observe his own stuttering in a mirror or by means of a tape recorder. It is reflected in his sense of humor regarding his stuttering and, of course, in countless other ways as well.

III. Adjustment to others: no difficulty; slight; moderate; marked; very marked difficulty.
 A. Attitude toward others, with due reference to specific

individuals of special importance. The attitude may range from a negative distrust, dislike, or rejection of others to a positive trustfulness, responsiveness, and friendliness toward others.

B. Relationships with others.
 1. Number of close friends.
 2. Number of acquaintances.
 3. Group memberships; number of offices held; extent of active participation.
 4. Degree of participation in school activities, including playground activities and sports.
 5. Extent of dating; level of social skills, such as dancing; degree of enjoyment of parties.
 6. Sharing of hobbies—that is, the stutterer's preference for doing things with others rather than retiring to the basement or the attic, as it were, to pursue his hobbies by himself, is to be evaluated.

IV. Self-adjustment: no difficulty; slight; moderate; marked; very marked difficulty.

A. Attitude toward self. The stutterer's attitude toward himself can range from negative self-rejection, a poor opinion of himself, a feeling of inferiority, to positive self-acceptance and a good opinion of himself that acknowledges his faults and places them in perspective in relation to his assets with due recognition of his capacity for future growth and improvement.

V. Adjustment to school: no difficulty; slight; moderate; marked; very marked difficulty.

A. Attitude toward school. This attitude may range from negative dislike of school, teachers, schoolmates, studies, and so forth, to positive enjoyment of school and the companionship of the other children, appreciation of the teachers' efforts and of the opportunity to achieve an education, and a lively interest in studies.

B. Scholastic achievement with reference to specific subjects as well as grade placement

C. Special school problems. Problems may involve crowded classroom conditions, questionable school policies or instructional procedures, unfortunate teacher-pupil re-

lations, transportation difficulties, lack of necessary or desirable speech correction or other special services, and so forth. There may be discipline problems of various sorts, personality clashes with classmates, and the like.

VI. Adjustment to home and family: no difficulty; slight; moderate; marked; very marked difficulty.
 A. Relationship with parents. This can range from warm, intimate, and secure to cold, noncommunicative, and unstable. It can range from rejection, through a constructive balance between independence and dependence, to overprotectiveness.
 B. Relationship with brothers and sisters, if any. This can range from tense rivalry and ill feeling, through mutual good feeling and cooperativeness, to either overdependence or oversolicitousness.
 C. Family problems. These may be of any sort from financial to strained relationships between the parents, including separation and divorce. The cohesiveness and general character of the larger family group, including grandparents and other relatives are to be considered too.

VII. Physical health: no difficulty; slight; moderate; marked; very marked difficulty.
 A. Physical condition. General state of nutrition, vitality, and general health. Presence and degree of diseases, insufficiencies, or impairments.
 B. Attitude toward physical condition. Tendency to be overconcerned, worrisome, and fussy about health. Unwarranted suspicion, without medical or laboratory evidence, that the stuttering is a sign of physical weakness or deficiency of some sort. Tendency to worry about possible hereditary cause of the stuttering. Unwarranted overconcern about getting enough rest and sleep and "not overdoing."

VIII. Adjustment to remedial training: no difficulty; slight; moderate; marked; very marked difficulty.
 A. Motivation for doing remedial work. This can range from marked absence of motivation for work, even

active resistance to it, to keen interest in learning what might be done to improve, and a consistent show of good work habits. Problems can center around the stutterer's expectation of a magical cure, "the pink pill," "the sudden miracle." They can arise from the stutterer's extreme fear of stuttering and speaking and his consequent repertoire of tensing reactions. The stutterer's willingness and ability to talk freely about his problems are important in this connection. Lack of adequate motivation can be due to a great variety of reasons.

B. Conditions under which remedial training is attempted. There can be difficulties in retraining traceable to the attitudes and practices of the parents. In some instances there is lack of time, or the stutterer is too busy with other things, or there may be transportation difficulties. Illnesses may interfere. The stuttering may be so mild that it is difficult to figure out what changes to attempt that will not intensify the problem. There may be limitations of intelligence. Other problems, physical or psychological, may complicate the picture. There are other such possibilities, of course.

Special concerns of the classroom teacher The aspects of the stuttering youngster's total problem that are of chief interest to the classroom teacher are those having to do with his adjustment to school, first of all, and his adjustment to himself and to the other members of his problem. She will be concerned so far as she can be with his adjustment to home and family. There is much that is fundamental that she can do also about the speech aspects of his problem aside from his stuttering, although she can be most effective along this line if she coordinates what she does with what is being done by the speech clinician.

If there is no speech clinician, the classroom teacher should work on the child's speech, to the extent that she does, with due appreciation of the influence his stuttering has on the other aspects of his speech behavior, and with continuing awareness of the role of her other pupils as members of his problem. She can do her best to see to it that he receives any medical attention

he may require for whatever reason, and that he not be encouraged to worry about his health needlessly. If there is a speech clinician in the school, the classroom teacher can do much to contribute to the stutterer's adjustment to the remedial program which the speech clinician is attempting to carry forward with him.

The classroom teacher, in an effort to help the stuttering child improve the various aspects of his adjustment and of his general speech behavior, can do best, as a rule, in the following specific ways:

1. ENCOURAGE MORE TALKING. Encourage the child to talk more. This may be the single most important type of improvement for a stutterer to achieve because his speaking time is his working time. Practically any speech improvement he is going to accomplish will have to be achieved while he is speaking and through the act of speaking. The stuttering youngster who talks only five full minutes a day or less (and there are many such) can hardly change his speech behavior or his feelings about it at all because he is not speaking enough to practice anything sufficiently to achieve any significant effect. Talking at least a half-hour to an hour or more a day will not necessarily lead to improvement along other lines, though in and of itself it is likely to have some good effects, but it at least makes various improvements possible that would otherwise not be possible. It brings the child into relationship with the other members of his problem, the children and the grownups to whom he does his increased talking, and makes possible—and likely—improvement in his attitudes toward them, in their attitudes toward him, and in his social adjustment generally. It tends to make him feel more adequate, to decrease his feelings of inferiority, and to lead to improvement generally along the dimension of self-adjustment. And it is well-known that experience in speaking tends to lead to improvement in basic speech skills, expressiveness, and poise, and so an increase in daily speaking time is one of the surest means to improvement in general speech behavior.

Every now and then a stuttering child comes along who talks not too little but much too much, who rattles on almost endlessly. He is to be encouraged to "talk the way the other children talk" so that he, too, may enter into the desired relationship mentioned above.

The classroom teacher should get to know the child who stutters by talking to him, consulting the school records concerning him, checking with the speech clinician, if there is one, and with his other teachers, past and present, and it is desirable that she also talk with his parents. Having become acquainted with him, and his problem, and his feelings about it, she will be prepared to encourage him in many ways to do more talking. First of all, she will be a good listener; she will want to get him to do more talking to her, especially outside class hours. Judiciously, she can draw him more often into the talking that goes on in the classroom itself. She can find and make errands for him to run. She can arrange for him to help sell tickets at games, serve on a refreshments committee this week, a clean-up crew next week, see the janitor about the use of a room after school hours, and so on and on until a very considerable increase in speaking is achieved. And more talking leads to more talking, partly because the more people a child talks to the more people he knows to whom he will talk again whenever he meets them. The effects of increased speaking tend to be good in many ways and they are cumulative.

In carrying out these suggestions, the teacher should always bear in mind, of course, that, as was pointed out in Chapter Two, some stuttering children are so disturbed emotionally by their speech difficulty that it is sometimes advisable to arrange things so that they have little or no speaking to do until they have gained needed self-assurance. A stuttering pupil should never be *forced* to recite, or to speak, or read aloud. He should be given the opportunity and rewarded if he takes advantage of it. But disapproval should never be shown if he is too overcome with fear to speak. The teacher should do anything she can, by her handling of classroom situations generally, and by talking with the child whenever she can find the time for it, to develop his desire to speak.

By doing this and by following the recommendations made in Chapter Two, the teacher can usually help to increase appreciably the stuttering child's desire to talk, his capacity for enjoying speech, and the amount of speaking he does.

2. MAKE TALKING ENJOYABLE. See to it that the child has as much feeling of success as possible in speaking. The teacher should do all she can to make the child's speaking enjoyable and

rewarding. Certainly, she will not make a point of criticizing him for mistakes in grammar or pronunciation, or for the way he stands when he talks, or for other things about his speech that are not important in relation to the fun and satisfaction he gets from speaking as well as he can. She will associate his speaking with her own pleasantness, with interesting classroom activities, and in general, try to see to it that he finds speaking pleasant and fun to do.

It is of great importance to recognize the fact that the relatively young stutterer has not yet developed an elaborate pattern of habits, attitudes, and dread-ridden memories. He is comparatively susceptible to the direct effects of successful speaking experiences. Surely, one of the strongest impressions one receives in becoming acquainted with considerable numbers of young stutterers—at about the age level of first to fourth or fifth grade in school—and in working closely with them, is that they are so very much like other youngsters of their own age who do not stutter and so strikingly unlike severe adult stutterers.

In a speech correction camp or a summer clinic at a university, the homesick young stutterer or the unsmiling one is very conspicuous in being rare and different from his energetic, darting, grinning, friendly companions who are full of chatter and whose eyes twinkle quite as much as do the eyes of any other group of children in a camp or school situation. At that age their tensings, even when marked, are not firmly set, and the concern and anxiety that motivate them are still fleeting, and not yet well enough established to last long in competition with an abundance of the good feelings that come with successful and pleasant speaking. The youngster's memories are short. If he has very good speech experiences on Wednesday, their Thursday effects will be strong because he has no overwhelming background of unnerving memories to weaken them or blot them out. Not only is it true, then, that the more speaking the stuttering child does the better, but in addition—an extremely important addition—the more fun, and enjoyment, and feeling of success he gets from his speaking, the better.

A child is most likely to feel that his speech is successful when he speaks without stuttering, or with what seems to him to be much less stuttering than usual. It is important, therefore, that

the teacher find out as much as she can about the kinds of speaking the child does with little or no stuttering. Some stuttering youngsters can read aloud with slight or no difficulty. Others can recite memorized poetry or other material. Many are quite fluent on the playground. Most do better if a classroom discussion becomes lively and "sneaks up on them" so that they are into it before they know it, than they do when it is formal and they are "called upon" by the teacher to say something apart from any verbal give-and-take with the other children. Usually a child talks more freely and fluently with certain important members of his problem—friends, or classmates, or teachers—than with others who seem not so important to him. The teacher should do what she can and counsel the parents to do what they can to get the stuttering child to do as much as possible of the kinds of speaking he does best. The more this kind of experience and the good feelings that result from it can be made to outweigh his stuttering experiences and their effects, the more rapidly and fully he is likely to improve. The teacher should not feel guilty if the child stutters when he talks. And the child should not be criticized for the stuttering he does, of course. As we shall consider in detail presently, it is to the child's advantage to accept the stuttering he does *in a frank and objective manner as a problem to be faced.* At the same time, it is also beneficial for him to learn by experience that he is capable of good speech.

3. STIMULATE INTEREST. Stimulate the stuttering child's interest in good speech and effective speakers. Phonograph recordings made by the world's best tellers of children's stories tend to have the effect of deepening a child's feeling for delightful, and emotionally satisfying, as well as intellectually challenging, speech. Whatever a child appreciates and admires, he is likely to want to do himself at least to some degree. In trying to increase the youngster's enjoyment of effective speech, there need be no danger of creating the impression that desirable speech is so excellent that he can never attain it. After all, most youngsters who admire Sandy Koufax or Mickey Mantle are driven by their admiration of these superb baseball players to play baseball more rather than less. If a child thinks of speech as something delightful and wonderful, he will be likely to do more talking than he would otherwise.

4. ENCOURAGE SELF-UNDERSTANDING. Encourage the child to talk about the stuttering he does and his feelings about it. This suggestion is to be applied, of course, with a generous dash of common sense. There is no point, and there can be undesirable consequences, in trying to get a youngster to talk about "problems" that he honestly doesn't recognize and to ventilate "deep feelings" that he doesn't have. If the teacher is not certain that a child recognizes his speech difficulty as stuttering and that he is bothered by it, that is, if he is not a significant member of his own problem, she should either do nothing about his "problem," or she should do whatever she does without talking to him about it at all, or, at least, not in any very serious or intimate way.

If, however, it is obvious that the child feels he is involved in a speech problem and that he is definitely concerned about it in the classroom or elsewhere, it can amount to a kind of neglect not to encourage him to discuss it at least with reference to the most essential decisions that must be made about his participation in class activities. If he can be led to share his concerns and bafflements with others, almost always they will be genuinely interested in trying to help him work out a better understanding of his problem and of what best to do about it. This tends, naturally, to make for improvement in his relationships with others.

A striking example of the good that can come from this sort of speaking experience has been described by Mrs. Elizabeth Parker Small, a speech therapist in Tasmania. A 10-year-old girl in one of the schools where Mrs. Small was working arrived after some weeks of remedial speech work at the decision to speak to her class about her speech problem and what the class could do to help her learn to speak better. She also demonstrated to them some of the variations in her stuttering. The response was excellent. "She has hardly stuttered since she gave the talk and is now so enthusiastic for her teacher to give her speech assignments [that the teacher has] begun to feel I should discharge her." The "payoff" came when she won a speaking contest at the school with an outside judge![99]

[99] This information was contained in a personal letter to the writer and is reproduced here with Mrs. Small's permission, which is gratefully acknowledged.

Actually, most youngsters who stutter enough to be bothered by it are very responsive to any teacher sufficiently interested to take a friendly initiative in talking about it with them and in trying to be helpful. In general, getting a stuttering child to talk freely about the way he talks, the experiences he has because of it, and the feelings he has about it, is one of the most direct and effective means to the improvement of his personal and social adjustment in school and out.

5. ENCOURAGE REALISM. Help the child to develop a more realistic attitude toward the stuttering he does. In addition to the suggestions that have been made, it is possible in nearly all cases in which it would be judicious to say or do anything at all, to accomplish some good by helping the youngster to place the stuttering he does in perspective with all of the normal talking he does. Stutterers tend to exaggerate the amount of stuttering they do and the seriousness of its consequences. It is not as "shameful" or "disastrous" as they are more or less inclined to think it is. Nearly always, it pays to compare notes with the child about the importance of the stuttering he does and in a forthright manner to talk it out with him in an effort to help him face the problem in its realistic proportions.

6. ENCOURAGE SELF-ESTEEM. Help the child to develop a realistically good opinion of himself. A child who stutters comes, in time, to think of himself as *a stutterer*. It is possible to think of oneself as a stutterer so often, and over such a long period, and with such preoccupation, that one actually fails to notice or else disregards most of the other facts about oneself. It is obviously beneficial to a child who stutters to give due attention and thought to his other characteristics, his good health, his speed as a runner, the fact that his muscles are growing, the good or at least acceptable grades that he makes, perhaps his skills and assets generally, his pet calf, his paper route, his friends, everything that is good about his home and his family, and so on and on, well beyond the boundary of discouragement. This is part of the general matter of putting the stuttering in perspective, but it is more than that. It should involve the child's positive, continuous acknowledging and emphasizing of his accomplishments, and other reasons for having a good opinion of himself.

As feasible, the child's parents should be persuaded to do all they can to make it possible for the child to take lessons in danc-

ing, or music, or art, or in some sport—or to see that he has time to sit under a tree, busy doing nothing!

If the child comes from an underprivileged home, an effort should be made to get him in touch with community recreation centers, the neighborhood public library, or social work agencies that might be in a position to expand his opportunities for play, special study, or the exercise of talents which might otherwise be neglected. The teacher will sometimes be able to get help for the pupil from other members of the school staff—the orchestra leader, coaching staff, dramatics instructor, school psychologist, and so forth, depending on the type of school. In some cases, private individuals can be found who will be willing, even delighted, to spend time with the child teaching him to draw cartoons, play the banjo, do sleight-of-hand tricks, build radios, or whatnot. The proprietors of any hobby shops in the community are likely to have useful ideas and to know individuals from whom the youngster might learn much that he would otherwise miss.

It should not be overlooked that in some cases a great deal of good can be done by helping children to learn more about social graces, grooming, what to do at a party or on a date, and in general, how to cultivate their good personal qualities—all this, of course, tempered with common sense. If the teacher has established a good relationship with the stuttering child, she is likely to be pleasantly surprised by the ease with which she can enter into such problems with the youngster without embarrassment or awkwardness. Many a young girl would be forever grateful to any teacher who would show her how to do her hair to the best advantage, how to combine colors effectively, and how, in general, to conduct herself at a party. Often it is not a question of money so much as a matter of making the most of what the child has to work with.

It is sometimes possible to suggest reading material from which a particular child would benefit greatly. A competent librarian or the school psychologist perhaps, if there is one, can be helpful in this connection. There are many attractive books, genuinely interesting to youngsters, on etiquette, clothes, ideas for parties, and the sensible and effective use of cosmetics. Moreover, many children just do not know much about those distinguished per-

sonalities who, for most of us, serve in some measure as "models." Almost any library contains numerous excellent juvenile biographies of Jane Addams, Marie Curie, Susan B. Anthony, Eleanor Roosevelt, Jacqueline Kennedy, Helen Keller, and other outstanding women; Abraham Lincoln, "Teddy" Roosevelt, Thomas Edison, George Washington, Lou Gehrig, Bob Feller, John Glenn, and countless other admirable men. Children like such books and derive tremendous benefits from them. Good material can be found also in children's magazines and other current publications. Much, indeed, can be accomplished through guided reading.

Asking a child frequently to report the things he has done or that have happened to him that he feels good about is one simple technique for encouraging him to keep his justifiable reasons for pride in clear focus. It is not a matter of encouraging boasting or egotism, but only of encouraging desirable self-development and of including in self-evaluation the good things along with the neutral and the not-so-good.

7. ENCOURAGE APPRECIATION OF OTHERS. Help the child to see the best in others. Good social adjustment depends in large measure on favorable relationships with other people. It is possible for the teacher to do a great deal about this for the child who stutters. She can do this directly as well as by means of the example she sets by her own positive attitudes and reactions toward her pupils and her associates. By talking to the child about his parents, his other teachers, and his classmates in ways that express good will toward them and a lively appreciation of the worth of each individual, the teacher can exert a very considerable influence on the youngster, helping him to be more trustful of others, less afraid of them, less resentful of them for reasons that often may be imaginary. She can influence him to enjoy being with others more, doing more things with them, getting to know them better, talking with them more and more. These effects are nearly certain to contribute to the improvement of his speech.

8. ENCOURAGE PARTICIPATION IN ACTIVITIES. Help the child who stutters to participate more fully in school activities. A child's social adjustment is, to an important degree, a function of the friendships he forms, the groups with which he identifies

himself, and the activities he shares with others. The teacher can often help a child who stutters, and who for that reason may be rather shy and withdrawing, to work and play together with more children, to join or take a more active part in clubs suited to his needs or interests, to be a member of the chorus or orchestra, to be a member of a stage crew, and to have more acquaintances and friends, and to play a more active part in various other ways in the life of his school. The effect on his speech can hardly be other than good.

9. ENCOURAGE APPRECIATION OF LEARNING. Encourage the child to enjoy learning and to cultivate worthwhile interests. One of the major problems of many adults who stutter is that of adjusting to the world of serious work and the responsibilities of earning a living. Many of them carry their avoidance of stuttering to the extreme of avoiding vocations which seem to require very much speaking and the training programs that lead to them. The result is a good deal of vocational maladjustment, which amounts, in some cases, to the most serious aspect of the stutterer's overall problem. The case histories of such stutterers generally indicate a failure during childhood to develop serious and substantial interests and hobbies that might have grown into vocational choices in adulthood. Many of them also indicate that they had never been stimulated to see the value of learning and education, to seek pleasure in reading, or experimenting, or observing, or visiting new places, and seeing people at work in unfamiliar ways. The teacher of a child who stutters can do much to ward off later vocational maladjustment and to enable the youngster to live a rich life day by day if she will use her ingenuity to help him cultivate a keen appreciation of learning, a liking for reading, a preference for informative and cultural television programs, and a lively interest in the various kinds of work that men and women do to make their livings and to gain their important satisfactions. An active interest in the daily news, in the world and the people in it, in science and politics, business and industry, sports, and "everything"—this is a sign of health. It is good insurance against drifting into an unsatisfactory vocation for want of information about the world's wonderful possibilities for useful and rewarding work. It is one of the finest things a teacher can help a stuttering child to acquire.

This recital of suggestions for the teacher who is in a position to be helpful to a child who stutters serves to underscore again the point that was stressed in Chapter Two: that what is good for speech handicapped children is good for other children, too. And it is good for teachers to do these things for children. Everybody gains when anyone is helped to become a better person.

Special concerns of the speech clinician The preceding section is fully as relevant to the interests of the speech clinician as to those of the classroom teacher. When both are present in a situation, they will benefit, and so will the child, if they will work closely together. They will both do the same things to a considerable degree, of course. There are some additional things, however, that a speech clinician is prepared to do, and we shall now consider these.

1. BUILD CONFIDENCE. Build the stuttering child's confidence in his physical ability to speak normally. Much that the classroom teacher can do will help to accomplish this purpose, but the speech clinician is likely to be equipped with more specialized information that is reassuring to the child—and his parents and other members of his problem—and to be in a position to work more systematically, and for a longer period, in an effort to achieve this objective. The general point of view that stuttering is simply learned behavior can be translated into action in a very direct way by demonstrating to the child who stutters that he is physically able to speak without stuttering. This can be done as follows:

a. Suggest to the child that he find opportunity often to talk to himself (or to his pets, perhaps) with no one near to overhear him. The chances are very great that he will be able to talk to himself with no difficulty. He may, of course, stutter occasionally, and a rare child will be found who stutters almost as much when alone as at other times. This appears to be due partly to the tendency to visualize or imagine very vividly a particular listener or an audience, so that in a psychological sense the speaker is not entirely "alone." Also, some people who stutter are so convinced that certain sounds or words are very difficult—they are so thoroughly conditioned to reacting with anxiety and tensing to these sounds or words—that even when talking to themselves they

sometimes make the usual conditioned responses. It is well to know this in order to explain to any child who may stutter a bit when alone why he does. The great majority of children, however, will report that they don't stutter when talking to themselves, and they will be hopefully impressed with the clear meaning of this: that their speech mechanism is normal. Most of them probably have never looked at it that way before. Even if they have, the clinician's reinforcing statements will go far to convince them that they can talk normally.

b. Have the child sing a few songs that he knows. We have yet to see one who could not do this without stuttering (although it might be possible to find one). Many of our friends who stutter have been talented in vocal music.

c. Try experimenting with rhythmic speech. Almost anyone who stutters usually will be able to talk in time to almost any rhythms. The child can be expected to speak without stuttering if he says one word to each step while walking, or one word to each tap of his foot, or swing of his arm, or to each flash of a light being turned on and off, to each tap on his shoulder, and so on. Practically all stutterers can speak in a singsong manner, or with an assumed dialect. Such practices are not to be regarded as "cures," of course. Indeed, *there is serious danger in a superficial use of them;* in employing them one must be careful not to suggest to the person who stutters that he is to avoid stuttering at all cost. This will increase his fear and he will, as a consequence, stutter worse than ever. The point of rhythm-speaking is to demonstrate to the speaker that his speech mechanism is in good working order—not that he should immediately expect to talk that way.

The other methods suggested to the classroom teacher for giving the stuttering child successful speech experiences also can be used, of course, by the speech clinician for the present purpose. And the desired effects of all these procedures can be reinforced considerably by the speech clinician if he will tell the child in language he can understand the main facts, gained through scientific research, that will enable him to feel more confident of his own physical normality. The speech clinician is in a strategic position to give this scientific information to the child's parents also; it will usually be advantageous to do this.

2. ENCOURAGE SELF-OBSERVATION. Train the child to observe

his tensing, hesitating, repeating, and struggling in his speaking behavior, encourage him to view it as something he does, and urge him to try to talk more easily.

Before describing the specific procedures to be used, we must give attention to a very important consideration which arises at this point. Everything we have covered so far, by way of methods of helping children who stutter, can appropriately be used with the general run of elementary school age children, and much that has been suggested can be applied also in working with adults, of course. We are now about to consider a number of procedures that are to be adapted in various ways to the special requirements and peculiarities of individual cases, and so they are to be used with discrimination. In general, in working with very young stutterers, those who definitely are anxious, and who show signs of tensing but whose habit systems are not well-established, it is advisable to make extensive use of the techniques discussed up to this point, giving them a very good trial before electing to employ the methods about to be described.

In the following paragraphs, the procedures that we are going to consider constitute a very intensive direct attack on the stuttering aspect of the problem, and are designed particularly for stutterers in whom the stuttering reactions of anxiety and tensing are firmly set and relatively difficult to modify or eliminate. Prospective speech clinicians using this textbook will be professionally concerned with these procedures, of course, and prospective classroom teachers will gain from a knowledge of these methods an improved preparation for working cooperatively with speech clinicians.

An outstanding characteristic of well-established stuttering behavior is its relative automaticity, its tendency to "go off like a reflex." Stutterers commonly talk about it as though it were not really their own behavior, but rather something that "just happens to them." They say they "can't help it." They usually claim to have little or no control over it. For all practical purposes, most of them "don't know how they do it." Moreover, a significant aspect of their strong drive to keep from stuttering is to be seen in their extreme tendency not to observe their own stuttering behavior, to give it no studious attention, to make little or

no effort to inform themselves about it. This tends to mean that, unless the stuttering behavior can be changed by the indirect methods so far considered (or by other methods not covered in this textbook), the stutterer must attack it directly—and he is not likely to be well-oriented to his stuttering as a problem to be faced and solved by means of his own efforts.

The stutterer of whom we now are speaking has come to take for granted, as though there could be no doubt about it, that it is necessary for him to exert the effort he is accustomed to exerting in order to talk at all. It takes an amount of practice and work very few stutterers would expect to have to undergo in order to achieve the speech of which they are capable. Only skillful counseling by an understanding clinician can provide, for most of them, the strong motivation they must have in order to persist in the arduous program necessary to transform the vicious circle of stuttering leading to more stuttering into the benevolent spiral of smoother and easier speech leading to speech still smoother and still more easy until normal speech is attained.

The counseling that this stutterer needs is a particular combination of a certain kind of education—specific items of information and assistance in assimilating and acting on this information; empathic and catalytic listening that encourages the essential ventilation of feelings and the clarification of assumptions and beliefs; active assistance in analyzing the details of those tensing reactions that interfere with what otherwise would be his normal speech; instruction in how to achieve specific modifications of his speech behavior; and constant support and skillful motivation of the stutterer's continuing efforts to help himself to achieve better speech and more effective communication relationships with other persons.

Research and clinical experience suggest the following more important aspects of effective counseling in this situation:

a. *The stutterer needs to develop a sharp sense of contrast between what he does that he calls "stuttering" and what he does that he calls "talking normally."* It is helpful to him in this connection to interact with a clinician who can talk with him about what it is like to be a normal speaker or to be a stutterer who has come to understand very clearly the difference between

his own stuttered and nonstuttered speech. It is a revelation to most stutterers to learn that a normal speaker hasn't the faintest idea what he does inside his mouth and throat when he says, for example, "Massachusetts." On the other hand, the stutterer can tell you, and unfortunately tells himself, exactly what he "has to do" in order to say "Massachusetts." That is one of the reasons he stutters—that is, tenses in ways that interfere with his otherwise normal speech—when he tries to say that word or another. The stutterer can benefit from listening empathically to normal speakers, trying very hard to feel as they seem to feel, trying hard to imagine, and to sense what it is like to talk so effortlessly and with such evident lack of concern about whether or not "the words will come out."

b. *It is to the stutterer's advantage to cultivate a normal self-image.* He should do, insofar as possible, those things he would do if he were not a stutterer. He should definitely practice trying to picture himself in various specific situations speaking easily and fluently, without fear, or concern, and with enjoyment. He should try to imagine himself in vocational as well as social situations conducting himself as a normal speaker. With a well-developed, normal self-image, he is less likely to expect trouble in speaking, and so, he is less likely to do the things he has been accustomed to doing in the effort to avoid trouble, the things that interfere with his otherwise normal speech.

c. *The stutterer stands to gain by talking about his problem.* At first, the clinician will encourage him to talk about it in any way that seems most natural for him. If he seems able to talk about it only in a very emotional fashion, this is much better than not talking about it at all. As he is encouraged to talk more and more freely and fully about his stuttering and the way he feels about it, the experiences that he has had with it, and what it has been like for him to be regarded by others as an "abnormal" person, he can be guided into using a more descriptive kind of language—the language of what, where, when. As the statements he makes about the problem become more clear and more valid, his understanding of it will increase.

He should be helped to realize that others are interested in the way he talks, and that by helping them to understand, he increases his own understanding of the problem. By talking about

his problem he makes himself more understandable to others, with the wonderful advantage that they can then be more understanding not only of what he does as he talks but also of him as a person. Most people who complain that others do not understand them either have never learned or they have forgotten the ancient wisdom that in order to be understood we must make ourselves understandable.

d. *Some kinds of language are better than others for purposes of problem solving.* Most stutterers, like most other people in our culture, talk as a usual thing with what can be called an "is" and "have" language; they would benefit from learning to speak more often a "do" language. The stutterer is likely to say that he *is* a stutterer, or that he *is* nervous, or that he *has* anxiety, or that he *has* a fear of stuttering. The trouble with this language is that it does not suggest what is to be done. It is quite difficult to imagine what you can *do* about what you *are* or what you *have*. Talking about what you *are* and what you *have* tends, therefore, to leave you with a hopeless feeling that this is just the way things *are*, that there is nothing you can *do* to change them for the better. On the other hand, if a stutterer talks about what he *does* ("I hold my breath sometimes when I am trying to say a word," or "I often avoid going into situations where I think I might have to talk to other people"), what he tells himself suggests a possibility of change. He can change what he *does* and, because he knows he can, he is more likely to try. The skillful speech clinician places great emphasis, therefore, on getting the stutterer to speak a "do" language habitually, rather than an "is" and "have" language, in talking about himself and his problem.

Most stutterers, like most normal speakers in our society, talk what might be called a "noun-y" rather than a "verb-y" sort of language. The stutterer uses the word "stuttering" as though it were a noun far more often than he uses it as a verb. He talks about his stuttering not so much as though he were referring to his own activities but as though he were talking about a thing, and a live thing at that, which he has inside of him and over which he can exercise no control. So he says, for example, that his stuttering comes and goes, his stuttering is worse today, or better, his stuttering keeps him from taking part in class dis-

cussions, and so forth. Such uses of the word "stuttering" as a noun influence the stutterer to take it more or less for granted that stuttering is not something that he himself does, but that it is some thing he has inside of him that makes it hard for him to talk, and so he thinks he has to exert effort in order to talk in spite of this thing, this stuttering. Such language does little to help him realize that it is the extra effort he exerts that is the stuttering—that stuttering is something he *does* and not a thing he *has*. Stutterers often talk about "the words that won't come out," using the word, "word," as though to refer to a willful and independent thing rather than to a series of activities which he himself performs—or fails to perform. In the same way, the stutterer often talks about his fear, as though he were using the word as a noun to refer to a thing, rather than talking about his fearing. It is to the stutterer's advantage to cultivate a verb-y rather than a noun-y language, and it is a prime objective of the speech clinician to assist him in this fundamental modification of his language behavior.

e. *By cultivating a descriptive language for talking about what he does when he stutters—what he does, that is, that interferes with his otherwise normal speaking—the stutterer is helped to become more and more aware of what he does when he speaks that he needs to eliminate, or to modify, in order to do the good speaking of which he otherwise would be capable.* By speaking descriptively about what he does that interferes with his speech, the stutterer also substantially counteracts his fear of stuttering. This fear depends essentially on his assumption that stuttering is something that happens to him rather than something he does himself. He should cease to think of it as something that happens to him, which he cannot control. He should learn to recognize it as consisting of various forms of tensing, of jamming his tongue up against the back of his upper front teeth, or pressing his lips tightly together, or other interfering activities. Then it will become easier for him to understand that he is able to talk without doing these things at all, or that, at least, he can do them with less effort and in varied ways, some of which are simpler and easier than others. His fear of stuttering is reduced in proportion to the increase in his confidence in his ability to change those ways of talking that are unacceptable to him. His cultivation of

a descriptive "do" language, therefore, is not to be thought of as a superficial sort of therapy. On the contrary, it is to be appreciated as therapy that is deep and basic insofar as its effects are concerned.

One of the most fundamental of the specific techniques that a stutterer can employ in order to become as fully aware as possible of what he does that interferes with his otherwise normal speech is that of static analysis.[100] Another name for this might be the "stop, look, listen, and feel" technique. A clinician asks the stutterer to read aloud or to talk and when he tenses in a way that both he and the clinician recognize as stuttering, the clinician instructs him to "hold it." He is to maintain the posture or position of the tensely compressed lips, or of the tongue pressed against the back of the front upper teeth, or whatever the pattern of tensing behavior might be, and the clinician supplies questions for him to answer, not out loud but to himself, as he continues to do his best to feel precisely what it is he is doing. It helps also if he looks at what he is doing in a mirror, and there is added advantage in using a tape recorder so he can later listen to the playback in addition to listening to what he is doing while he is doing it.

The questions supplied to the stutterer by the clinician, while he is holding the interfering tensing activity, are such as these: "What are you doing?" "What do you think would happen if you were not doing this?" "What do you think you are accomplishing by doing this?" "Is there anything else you might be doing that would help you to accomplish the same objective?" "Could you change what you are doing in any way at all that would be to your advantage?" "Do you think you have to do what you are doing?" "If you do think you have to do what you are doing, what is your evidence?" "If you were not doing what you are doing, what do you think you would be doing instead?" "Could you talk more easily if you did not do what you are doing?" "Would you stutter more or less if you were not doing what you are doing?" "Would you be talking normally if you were not doing what you are doing?" "Why don't you try talking without doing what you are doing now and see what happens?"

100 See Johnson, "The Descriptional Principle and the Principle of Static Analysis," in *Stuttering in Children and Adults, op. cit.*, pp. 432–444.

The stutterer is not to answer these questions aloud, as has been said, but he is to answer them to himself in his most thoughtful way as he continues to hold to the tensing. Finally the clinician says, "Now go ahead and say the word you were going to say." If when he says the word he tenses again, the clinician suggests to him that he say the word again, and this is continued until he does say the word normally. The clinician may, in fact, suggest that he say the word, without tensing, three or four times, in order to heighten his sense of contrast between the easy, practically effortless, normal utterance of the word and the tense, stuttered production of it. Over the years the stutterer has become convinced that he must exert a great deal of effort in order to speak. What he has to learn is that he speaks normally only when he does not exert the effort he has considered necessary.

The clinician suggests that the stutterer continue to read aloud or to speak and when next he stutters, the clinician again says, "Hold it." Again the questions are presented, and again the stutterer does his best to answer them to himself thoughtfully and to the best of his ability, while he maintains the tensing—the essence of what he calls his stuttering.

When this procedure has been employed for a while, it is no longer necessary for the clinician to ask the questions aloud; indeed, it is no longer necessary for the clinician to instruct the stutterer to "hold it." The stutterer himself learns to monitor his own tensing behavior, to examine it by holding it or maintaining it, to wonder about it, to ask himself the questions about it that are important, to answer them as honestly as he can, and to learn as best he can from this experience that what he calls his stuttering is something he does; that it consists primarily in tensing muscles so that he cannot use them as he otherwise would for speaking normally; and that if he does not tense these muscles in these ways he talks better, and, indeed, if he does not indulge in any of these interfering tensings, he talks essentially as any other normal speaker talks.

It is to be understood—and it is extremely important that it be well understood—that the stutterer will be able to modify and, often, even to eliminate, his tensing reactions in the clinical session, or when he is practicing by himself, for example, but that he must expect to put his new learning to use in ordinary speak-

ing situations with some degree of failure at first, and with improvement that is very gradual, and that extends over a relatively long period of time. During this gradual improvement he must, of course, continue to practice intensively with the supervision and help of the clinician and also by himself. The tensing reaction is for all practical purposes like a reflex, and all too often the stutterer finds himself tensing before he knows it. With continued practice in the way just described, and in many other ways, some of which will presently be described, the stutterer can reasonably expect to speak with an increasing sense of freedom from his reflex-like tensings.

The process described here consists primarily of unlearning rather than learning, in the usual sense of that word. It is to be duly appreciated that the stutterer does not really have to learn to talk. He knows how to talk. What he must learn is to talk without interfering with his talking. He needs to unlearn the reflex-like tensing reactions that interfere with the speaking that he has very well learned to do. In order to unlearn these interfering reactions, the stutterer must become extremely well-acquainted with them. He must demonstrate to himself beyond the remotest shadow of a doubt that they are unnecessary, that he does not need to tense in order to speak, but that indeed he does not speak well unless he does only those things that are necessary to do to talk. He must learn, above all, that there is no "stuttering" as a something inside him and that, therefore, there is nothing to be afraid of, nothing to contend with, nothing to avoid, except the interfering tensing that he himself does.

By examining exhaustively what he does that he calls his stuttering, by feeling the tensing he is doing and the movements he is making, by looking at himself in a mirror as he does these things, by listening carefully to his speech that he calls stuttering, by changing these unnecessary and interfering kinds of behavior, and by making a special point of talking without doing these things at all, he can gradually learn to speak without doing what he calls stuttering. He gradually learns to trust his muscles. He acquires the confidence he needs in order to turn his mouth on, as it were, and then stand back and calmly let it run. He learns, in other words, to speak without doubting whether he can and so without fearing what might happen if it should turn out that he can't.

f. *As the stutterer becomes better and better acquainted with the details of his own interfering tensings he is able to attack his problem by directly modifying his speaking behavior in certain specific ways.* For example, he can practice speaking or reading aloud in such a way as to eliminate completely the tensing reactions by the simple method of leaving out any word on which he begins to tense or on which he definitely expects to tense. He reads, thus, only words that he feels confident of saying without tensing. Usually, as the stutterer proceeds he leaves out fewer and fewer words, and finds himself eventually reading along saying all the words, and doing no tensing at all. It is difficult, and of course, to some degree impossible, to describe this experience to one who has never known it, as only a stutterer could. It is an experience that can be positively exhilarating for a stutterer. One must appreciate that some stutterers take to this more readily than others and show more ability in learning to read without tensing. Some do it readily on the first attempt while others learn slowly. It is a procedure by which the stutterer can effectively demonstrate to himself that if he does not tense at all, he does not experience anything that he is used to recognizing as stuttering. It heightens dramatically the contrast between utterance with and utterance without tensing.

Another simple procedure which the stutterer can use to achieve a specific change in his speaking behavior is that of simply reading aloud as fast as he can. He should do this expressively, saying the words distinctly and not slurring, and he should do enough of it to get used to the feeling of letting himself go ahead without holding back in the way that is characteristic of his stuttering behavior. If he is to do this with the greatest effectiveness, he must concentrate on speeding up to the very limit of his ability to maintain intelligible speech. The speeding up is a direct and very effective means of counteracting his usual or habitual manner of proceeding with caution, of pausing, slowing down, hesitating, "waiting for the light to turn green," with an eye out for trouble ahead. It is ironic that a common folk remedy suggested to stutterers is that they speak more slowly! To do so habitually would be for nearly all of them to move farther away from an approximation of normal speech. Practice in speaking or reading aloud as rapidly as possible is one of the stutterer's most direct ways of learning "in his muscles" what it means to

speak normally without indulging in the interfering reactions that constitute his stuttering.

g. *There is another procedure that can be used to advantage by the stutterer during certain clinical sessions or practice periods.* This consists of stopping after each stuttered word and saying it again, and if necessary again and again, continuing to repeat the word until it is uttered without stuttering, and so in a way that sounds and feels normal.[101] The rationale behind this procedure is based on the assumption that whatever the speaker does when he stutters is reinforced or rewarded by the fact that he eventually "gets the word out." So he develops the illusion that whatever he did "worked." If, for example, he presses his lips together hard for a few seconds and then manages to blurt out "Baltimore," he "learns" that pressing his lips together tightly "worked," and so he is all the more likely the next time he has to say "Baltimore"—and possibly any other word like it, such as any other word that begins with the *b* sound—to press the lips tightly together again. If, however, he says the word over again until he says it normally, the final utterance of the word serves to reinforce or reward whatever it was that he did in order to say it normally. There are probably some related benefits also, such as the basic reinforcement of the conviction that he is able to say the word normally. And for his usual feelings of embarrassment and discouragement, he substitutes the forthright attempt to do something about changing his speaking behavior "here and now," with the constructive and self-reassuring feelings that go with this sort of outright attack on the problem.

h. *As soon as the stutterer has gained a reasonably clear appreciation of the fact that his stuttering is made up of interfering reactions that he himself performs, and that a basic part of these reactions is the tensing involved in pressing his lips together tightly—or in jamming his tongue up against the hard palate or alveolar ridge, or in closing his jaws tightly, or in contracting the muscles which control the larynx so that he shuts off the flow of air through the glottis, and holds his breath—he can profitably devote parts of clinical sessions or practice periods*

101 For research relevant to this statement see Sheehan, "The Modification of Stuttering through Non-reinforcement," *Journal of Abnormal and Social Psychology* (1951), 46:51–63.

to concentrating on talking or reading aloud without tensing, or with as little tensing as possible. It is not quite correct to refer to this as "staying relaxed while talking," or as a "relaxation exercise." The normal speaker does not relax in order to speak; he simply does not tense his muscles unnecessarily. If he were to relax beyond the slight degree of muscle tension essential for normal speech he would slur some of his sounds and fail to enunciate clearly.

It is no more desirable for the stutterer to relax when he speaks than it is for a normal speaker to relax; on the other hand, it is as advantageous for the stutterer as it is for the normal speaker to speak with an optimal, or "just right," degree of muscle tone. He can heighten his awareness of this "just right" degree of muscle tone by paying close attention to what he feels in his lips, jaws, mouth, and throat when he is doing his best speaking, and particularly by attending to the heightened "muscle sense" feedback that he can experience. By concentrating frequently for short periods of time on the attempt to speak with a "just right" degree of muscle tone, the stutterer can become more used to speaking in this way, more accustomed to the feelings that go with it as being natural for him, and more effectively oriented to excessive tensing as a signal indicating to him that he is doing something which he does not need to do. His success in counteracting or eliminating the excessive tensing will depend, of course, on the thoroughness with which he has come to understand that there is no "stuttering" to be contended with, avoided, or "controlled," other than the tensing he himself performs. Once he thoroughly understands this, his own tensing becomes a kind of warning signal to which he is able to react more or less immediately by continuing his speaking activity while tensing less or "not at all."

i. *It should be thoroughly appreciated that as the stutterer comes to understand his stuttering problem in the terms in which it is presented here, he is likely to react mainly in the following ways.* First, he is likely to experience a great increase in hopefulness and encouragement. As he comes to see that what he calls his stuttering consists of his own behavior which he has learned, it becomes clear to him that he is able to unlearn this behavior. He understands that he is able to change what he does. He recog-

nizes that he does not have to learn how to talk because he already knows how to do that. He simply has to learn to let himself talk without doing the tensing that interferes with his talking. Second, he is likely to react with considerable impatience. He may become very intolerant of his tensing reactions that interfere with his speech and try hard not to do them, but in trying not to press his lips together tightly, for example, he may very well in his impatience simply exert more effort than before, pressing his lips together all the harder. He may put this into words by saying that he is trying to "force the word out," or "smash his way through," or other words to more or less the same effect. With these words he simply indicates that he is still thinking in the old way. He is thinking of stuttering as some "thing" that gets in his way and with which he has to contend by exerting effort—and at the instant that he is exerting this effort, he is not acting as though he really knew that it is nothing more nor less than the effort that he is exerting that is the stuttering.[102]

An imporant part of the counseling needed by the stutterer, therefore, consists of providing him with, or motivating him to obtain, clear and sufficient information about the stuttering problem, particularly that part of it which consists of his own behavior. This information will need to be gone over time and time again, partly because it does not agree with what he has thought about the problem. To a stutterer it is a strange idea, indeed, that stuttering consists of what he himself does trying to avoid, or control, something that he thinks is happening to him. He is able to understand this well only as he directly experiences various kinds of performances, such as those described above, and through other activities he and his clinician may be ingenious enough to think of. At the same time, he can do these things most effectively if he has cultivated a sound verbal understanding of the stuttering problem that makes the doing of these things meaningful. So it is that what he learns to say about the problem and what he learns to do about it must necessarily go together, the one reinforcing the other. It follows from this basic

102 These suggestions for therapy are included in Johnson, *Research in the Rehabilitation of Stutterers,* unpublished report (1963) of an investigation supported in part by research grant RD 319, from the Office of the Vocational Rehabilitation Administration, Department of Health, Education, and Welfare, Washington, D.C. See also *Stuttering and What You Can Do About It, op. cit.,* pp. 186–202.

consideration that in the treatment of stuttering, a combination of counseling plus performance is to be preferred over either counseling alone or performance alone.

Under the influence of the kind of counseling that encourages a stutterer to observe carefully just what he does to interfere with his otherwise normal speech, and to talk and think descriptively about what he does, with what effects, under what conditions, and to adjust the explanations he makes to himself about the problem to what he observes and what he can describe under the influence of this kind of counseling, it is possible for the stutterer to adapt to the realities of his own behavior and of his own ability to modify it to advantage. Although impatient to speak without stuttering because he has been persuaded that he is capable of doing so, he can, nevertheless, learn to accept the rate of improvement that he can in fact achieve. Meanwhile, it is possible for him to improve his perspective concerning the stuttering that he continues to do so long as he has not yet made habitual the normal speech of which he is capable. Because of the very fact that he is able to see the possibility of continued and substantial improvement, he can learn to take each experience with stuttering in stride and to let it become history without making a big thing of it. Moreover, he can perform in simple ways, and with a minimum of effort, and disruption of speech, the interfering tensing that he persists in doing. It is not extremely important whether he does this in one way or another. He may minimize the tensing by keeping up some kind of activity; for example, he may repeat the first part of a word a few times, or he may repeat the whole word, or he may repeat a phrase once or twice, perhaps as a means of "doing something else instead of going on tensing." Or he may prefer to "pull out" of the tensing by performing a simple prolonging of the sound involved. He may do something else of his own choosing. The important thing is that he do something besides just pressing his lips together tightly or holding his breath indefinitely. In certain clinical sessions or practice periods he can cultivate his developing skill in modifying his tensing reactions with the objective of performing them in the least disadvantageous way possible and in ways conducive to the cultivation of a feeling for normal speech.

j. *While the stutterer is giving his effort to improving his*

speech, he is to be encouraged to put his new attitudes to use in the classroom, to take part in class discussions and class projects which once he may have hesitated to participate in, and to be active in school organizations that interest him. He is to be encouraged, too, to pursue the hobbies in which he finds pleasure and fulfillment.

Counseling of parents In general, there are three kinds of parent-counseling situations that are dealt with by speech clinicians insofar as the fluency aspects of children's speech are concerned. First, there is the counseling situation involving the parents who are beginning to worry about their child's speech, and beginning also to react, even though slightly perhaps, to the youngster's disfluency—but as yet the problem is theirs rather than the child's. The child may or may not be more disfluent than most children of his age. Usually, he is not apparently aware of any difference and seems to be in no sense bothered by the way he speaks. If he appears conscious of his speech in any relevant way, the evidence of it is likely to be fleeting and generally superficial. Even if, at times, he reacts with definitely noticeable strain and uneasiness when hesitating in speaking, most of the time he does not do this. There are advantages in proceeding on the assumption that the person to be counseled is the parent rather than the child and that the child is chiefly or wholly responding to the parent rather than to his own speech. It is to be assumed further, therefore, that if the parent can be influenced to change his or her mode of evaluating and reacting to the child and his speech, the child will, in turn, change his mode of responding to the parent. The counseling, then, is directed toward the parents so as to effect such changes in their evaluations of the child, and his speech, and in their relevant policies and practices as will result in the reduction of pressures. The objective is to make speech pleasant and emotionally meaningful and satisfying for the child.

Second, there is the case in which the child-speech-parent interaction has developed to the point at which the child is, to an important degree, reacting to his own disfluent speech, but his speech-related anxieties and tensings are not yet well established, and he is still relatively very responsive to his parents'

feelings and to their practices in dealing with his speech disfluencies. The child is definitely having difficulty in speaking outside as well as inside the home; he is carrying his own trouble around with him. Counseling may or may not include him, but is directed mainly toward the parents to gain their understanding and cooperation as members of the problem.

Third, there is the situation in which the child's tensings and anxieties are so well established that he has joined his parents as an active member of the problem. Now he is included in the counseling. His parents are too, of course, but in a program that is enriched and extended in many ways to give them the help they must have if they, in turn, are to be helpful.

Whether the counselee is the parent only or both the child and the parent, there are in general three major specific objectives of the parent-counseling to be done:

1. SUPPLY INFORMATION. The first is that of supplying the parents with the information they need in order to appreciate the nature of normal childhood speech. They are helped by knowing the essential facts about normal speech development, especially so far as fluency is concerned. They are helped, too, by knowing about the more important conditions under which children—and adults for that matter—are more and less fluent in speech. In general, it is beneficial for them to become acquainted with the wide variations in normal speech fluency in different children and in the same children from circumstance to circumstance. This enables them to shift their attention away from the child's mouth, as it were, away from the disfluencies in his speech, and on to the conditions under which he tends to speak more and less disfluently. Williams and Kent, in a study of listener evaluations of speech interruptions, found that people tend to hear what they listen for. The authors point out, in a footnote to the study, that in their clinical work they have found it profitable

> first to acquaint the parents with the concept of normal speech and then to ask them to pay particular attention to and to keep track of the normal interruptions in their child's speaking behavior. Often, the parents, when faced with the task of listening for and noting normal interruptions, not only become more interested in what constitutes a normal interruption, but begin classifying more of the interruptions as

"normal." As a consequence, the number of interruptions reacted to as "stuttering" is reduced.[103]

A young child tends to speak with increased disfluency on certain occasions, for example: (a) when he tries to "talk over his head," to explain things he doesn't understand, or tell about things for which he lacks a ready-use vocabulary; (b) when he speaks to an unresponsive listener—to father engrossed in the evening newspaper or to mother when she is trying to figure out a new recipe; (c) when he speaks in competition with others—as at the family dinner table where he can hardly get a word in edgewise and so the best he can do sounds as though he were "having trouble talking"; (d) when he speaks in situations involving conflict—as when he is trying to do something other than what his mother or teacher or playmate wants him to do or as when he is trying to get others to do what he wants them to do instead of what they want to do; (e) when he speaks in distracting or disturbing circumstances—while very excited over a game or a new puppy or while being punished, especially when the reasons are not clear, or under conditions of moving into a new house or neighborhood, going on a bewildering or fatiguing trip, or entering a new play or school situation that seems confusing or threatening; and (f) when he speaks under the conditions involved in generally impaired or insecure parent-child relationships.

To the extent that such conditions are present, and apparently related to excessively hesitant or disfluent speech of the child, the parents are to be helped to recognize them and to change or eliminate them, as may be indicated, to provide a happier, calmer, more inviting home situation.

The story of little John is in point here. We had learned from the clinical interview and investigation in the home that this 4-year-old boy was doing more than a normal amount of repeating and was beginning to show unmistakably the reaction of anxiety and tensing. The full list of the conditions under which most of the speech difficulty was occurring was very long, owing to the fact that the mother was practically carrying on a "running fight" with the boy. She was arguing with him at the table

[103] William and Kent, "Listener Evaluations of Speech Interruptions," *op. cit.*

about the foods he wouldn't eat and about the way he ate the foods he would eat; in trying to get him to nap she practically wrestled with him nearly every afternoon; bedtime was another battle scene; whenever he ran to the neighbors she called him back or went and brought him back, usually against lively resistance; and in addition, he liked to "pound" the piano, but his father, who was a musician and "couldn't stand it," habitually insisted that he stop it. There were other details.

A program was worked out for changing all this. Eating habits were to be temporarily ignored. The nap was to be discontinued. A story hour was to be instituted at bedtime. Over the years, the writer has suggested to mothers and fathers that they make a practice of reading to their children, especially at bedtime, and has reason to believe that the results have been good. This suggestion, more specifically, is that by reading at bedtime, the parents prepare their child for a restful night in

> as warmly pleasant a way as can be imagined. [As he listens to your reading] just for him a delightful story, he associates the sounds of your voice with very nearly the nicest feelings he will ever know. In addition to all the other good that comes of this, you and your youngster acquire together from these stories read at bedtime a whole world of fact and fancy which you will share through all your days, and it will make talk between you endlessly. Your child gains words by the score, and a fabulous gallery of pictures in his head, and with them understandings and emotions that would never otherwise be his, and these will season delightfully the sense he will make and the pleasure he will find in his own speech.[104]

In the case of little John there were other recommendations, also. For example, he was to be allowed much more freedom in going about the neighborhood. The mother was to talk to the neighbors and explain that if he caused inconvenience she would appreciate their calling her; otherwise, he was to be free to come and go and play with the other children. Instead of resenting the "pounding," the father was to teach him how to play the piano—an idea that had never occurred to him and one he thought was excellent. Moreover, it worked out well and definitely brought the father and son closer together.

In order to get this whole plan of attack properly launched,

[104] *Stuttering and What You Can Do About It, op. cit.*, pp. 167–168.

it was suggested to the mother that she start it off by spending a day at the city park with John. She was to "talk it up" for at least three days, planning with him just how they would go, what they would do when they got there, what things they would take along, what they would carry in the lunch basket, whether to include orangeade or chocolate milk, and so on. Then when the Big Day came they were really to go and stay all day, just the two of them. He was to be allowed to play as he liked to his heart's content. The mother was to watch over his physical safety, of course, but gently and with no scolding whatever. They were to be pals for a day on a grand scale. Then, next morning, as soon as he came down to breakfast, the mother was to start a lively conversation about all the fun they had had the day before and she was to keep referring to it at every reasonable opportunity. And more good times were to be planned, and carried through, and talked about at great length.

All this was done, and it made a tremendous difference. In this case some clean-cut stuttering had definitely developed. Within two months, however, the mother reported that the speech problem had cleared up, that John's behavior—as well as her own—had improved generally, and that "you wouldn't recognize this home as the same place any more."

2. ENCOURAGE SELF-KNOWLEDGE. The second major purpose of parent-counseling is to help the parents, insofar as possible, to recognize their own insecurities, their excessive psychological need to have their child speak extremely well and perhaps to excel in other ways too and, in general, their specific discontents and the reasons for them. Most speech clinicians are not prepared by training and by their professional credentials to go beyond modest limits in this direction. They should be prepared, however, to listen well and to encourage expression of anxieties and other relevant feelings and to direct the parents to family counselors, mental health centers, child guidance clinics, psychiatrists, or clinical psychologists, to the extent that such are available and suited to the particular needs expressed or indicated.[105]

[105] Inquiries concerning family counseling and mental health services in particular states or communities should be addressed to state departments of health; state universities; and such national organizations as the American Medical Association, the American Psychological Association, the National

Nothing said here is meant to imply that the parents we are discussing are likely to be in unusual need of such services, for they generally are parents fairly representative of the general population insofar as their general adjustment is concerned. However, they do tend to be overconcerned about the speech, and specifically the speech fluency, of their children. If we are careful to speak a gray language, rather than a black-and-white one, we may also say that they tend to be a bit perfectionistic, to have standards for their children, especially speech standards, and most especially fluency standards, that are somewhat too high. Moreover, once such parents have decided their child is stuttering, they feel that they really do have something to worry about, and if the youngster develops marked anxieties and tensings in speaking, they definitely do have. So we find that they have some degree of anxiety, some tendency to worry about their children and, while this is part of the problem they present, it hardly means that they are very different from other parents. So far as they stand to gain from referral to counseling agencies, they should be assisted in obtaining the services such agencies have to offer.

3. ENCOURAGE COOPERATION. The third main objective in counseling parents is to help them to cooperate effectively with the speech clinician. In part, cooperation is a negative matter: the purpose is that the parents should not make an issue of the child's fluency one way or the other. That is, they should be neither disapproving or dismayed when he is disfluent nor complimentary or unusually pleased when he is not. With adequate understanding of speech development and of the normal variations in fluency and the common reasons for these variations, most parents are able to reduce greatly or even wholly eliminate their worry and concern about their child's hesitations. They are able then to react to the feelings the child is expressing and to what he is saying rather than to the degree of fluency or disfluency with which he is saying it. It seems a rather good, sound principle to assume that when a person gets the information he should have, he will do better.

Cooperation with the speech clinician is also a matter of

Association for Mental Health, or the United States Department of Health, Education, and Welfare. For addresses see Appendix IV.

reducing tensions in the home insofar as this seems desirable, removing unnecessary restrictions on the child's activities, providing consistent and meaningful discipline, and improving basic parent-child relationships in any and all ways that are readily possible. Finally, cooperation involves, in more advanced cases, an appreciation of the methods employed by the speech clinician and a certain amount of help in reminding the child to do his stuttering more easily and simply, in encouraging him to talk more in a greater variety of situations, and in providing the smiles and pats on the back that are needed by most youngsters in any sustained effort to improve their speech or any other aspect of their behavior.

As a basis for helping the parents to see what they might do to encourage the child to make the most of the possibilities for improving his speech, it is well to use the classroom teacher's list of procedures for helping children who stutter. The ways in which these procedures can be adapted to the home situation will vary, of course, and the speech clinician will need to exercise judgment according to the relevant facts in particular cases.

There is one very fundamental word of caution to be given about help from the parent. While there is much that most parents can do as a rule, it should not be overlooked that parents are individuals, too—parents have had parents themselves—and they are not always able to cooperate very well even when they understand what they should do. They cannot always change appreciably the home conditions which they have created for themselves. The reasons for this sometimes stem from personality characteristics that are difficult or impossible to change, and sometimes they are due to conditions beyond the parents' control —the nature of the father's occupation, financial hardship, grandparents or other relatives living in the home, and the like. One parent may be missing for any one of many reasons. After all is said and done, allowance must be made for the fact that, to an important degree, what parents do to their children is part and parcel of their general way of responding to the world about them. Parents, as well as their speech handicapped children, need to be sympathetically understood by the speech clinician.

Anyone who makes a vocation of trying to improve the behavior and the circumstances of others has need of a sustaining

patience, a mature acceptance of the best one can do, a freedom from cynicism, and a stubborn conviction that progress is man's destiny.[106] Certainly the speech clinician and the classroom teacher can make good use of these qualities day in and day out—and they tend, of course, to acquire them in ever richer measure. It is hardly to be expected that they might ever do as much good for others as they would want to, but what they are able to do for children who stutter, or who are on the way to becoming stutterers, is tremendous, and turns out often to be more than they could have dared to expect. The freedom to speak has consequences often more wonderful than we are wholly prepared to comprehend.

106 General experience with young stutterers has been more and more encouraging through the years as scientific investigation has brought us new understandings of the problem called stuttering. Because these investigations are continuing today, and in ever greater number and scope, the future looks promising indeed. The type of therapy described in this chapter has grown, as noted, from a large number of studies by the author and many others; it has been affected significantly by the clinical and theoretical contributions of Dr. Dean Williams of the University of Iowa, whose ongoing research is particularly relevant to the point here. Dr. Williams' program, supported by the United States Office of Education, is designed to add to the available information about the stuttering problem in children and to develop retraining principles and procedures in speech therapy that will satisfy felt needs of speech clinicians who work in the public schools. He is obtaining data about the variability of stuttering behavior and the related attitudes and feelings in children of different ages; he is studying problems that clinicians encounter in fitting a therapy program into a public school environment; he is observing the classroom and school problems that develop for the child who is said to stutter, for his teacher, and for his classmates. Assisting in the project are 104 public school speech clinicians in the state of Iowa. A public school therapy program, involving stutterers of various ages, is part of the experimental design.

SIX



RETARDED SPEECH DEVELOPMENT

In kindergarten and in the primary grades there may occasionally be found a child who is capable of very little speech. Such children are more numerous in nursery schools, where indeed they are often sent in the hope of stimulating the development of speech. Such children present some of the most difficult and challenging problems in the whole area of speech pathology.

The difficulty of diagnosing and treating these children is not decreased by the confusion in the literature of speech pathology regarding their problems. One author[1] collected 20 different terms used to refer to children whose speech development is significantly slower than normal, and other terms could be added to his list. In this chapter we shall use the term "retarded speech development" to avoid making dubious assumptions as to the nature or the cause of the condition, for there are a number of causes of delay in development of speech.

[1] William G. Peacher, "Neurological Factors in the Etiology of Delayed Speech," *Journal of Speech and Hearing Disorders* (1949), *14*.147–161.

NORMAL SPEECH DEVELOPMENT

The phonetic raw material of speech is heard first in crying, which normally begins at the moment of birth. The physiological function of the birth cry is the expansion of the infant's lungs and the commencement of respiration, but it is also the first vocalization. Gurgling and cooing are heard in the early weeks of life. These early vocal sounds are not speech, since they involve no conscious effort to communicate, but rather are reflex responses to internal or external stimuli. Quite early, however, there appear variations in the crying from one situation to another, and crying becomes more than an automatic and undifferentiated response to hunger or pain. The infant also begins to respond vocally to external stimuli, such as his mother's laughing and playing with him, and he thus achieves a level of communication of the sort that in more elaborate form is found in much adult social life.

By the time the infant is 3 months old he may be heard to utter six or seven vowels and four or five consonants. At 6 months the average infant has seven vowels and five consonants. At 9 months he has eight vowels and eight consonants and at 12 months he has nine vowels and ten consonants.[2] During the last half of the first year of life the infant's babbling becomes increasingly complicated. Out of this raw material are formed the first words, which appear between 10 and 14 months of age. By the time of their first birthday, most children have two or three words.[3] These may be far from perfect according to adult

2 These data are derived from studies published by Orvis C. Irwin and his students. Irwin's careful researches have added much precise detail to our knowledge of infant speech development. The figures in the text were taken from Han Piao Chen and Orvis C. Irwin, "Infant Speech: Vowel and Consonant Types," *Journal of Speech Disorders* (1946), *11*:27–29. See also Irwin, "Development of Speech during Infancy: Curve of Phonemic Frequencies," *Journal of Experimental Psychology* (1947), *37*:187–193; "Speech Development in the Young Child: 2. Some Factors Related to the Speech Development of the Infant and Young Child," *Journal of Speech and Hearing Disorders* (1952), *17*:269–279. For further discussion of articulation development see Darley in Wendell Johnson, Frederic L. Darley, and D. C. Spriestersbach, *Diagnostic Methods in Speech Pathology* (New York: Harper & Row, 1963), chap. 4.

3 Arnold Gesell and others, *Biographies of Child Development* (New York: Hoeber-Harper, 1939), p. 129: "The language norms for the second year of life in the Yale Developmental Schedules call for two words at 12 months,

standards. For example, the infant may say "bah" for "bottle"; he uses this combination consistently to refer in one way or another to the bottle. His saying "bah" may in some cases be a demand for food or it may be simple recognition of the object in question. Other meanings are possible, and variations in facial expression, vocal inflection, gestures, and loudness of utterance help to convey what the child intends to communicate.

During the second year of life the vocabulary grows slowly at first and then with increasing rapidity as the infant approaches his second birthday. During this same period there may be much use of jargon—a flow of jabbering syllables that has the cadence of the sort of speech the child hears. At times, a word that the child uses in other situations may be heard embedded in the apparently meaningless and haphazard stream of jargon. A few infants start to use jargon before 12 months. In most instances, the child develops jargon between 12 and 15 months and may come to spend many and long periods in this vocal activity, especially when in the presence of others. As his vocabulary increases, his use of jargon declines and as he begins to acquire facility in combining two or more words that are intelligible to others, he rather quickly stops using jargon. At 21 to 24 months of age the average infant is using combinations of words and simple sentences. More complicated expressions make their appearances later.

The speech of the infant or the young child may be difficult to understand because of his distortion of sounds and substitution of one sound for another. Final consonants are usually omitted in the early stages of speech development; medial consonants may or may not be omitted; one or two consonants may be omitted from blends.[4] Intelligibility gradually improves, however, as the child develops greater skill in speech. By the age of $3\frac{1}{2}$ years, the average child is able to speak intelligibly, that is, he can be understood by persons unacquainted with him.

The development of speech in the early years of life can be described in much greater detail than this brief sketch, and there

four at 15 months, and five or more at 18 months. Joining of two words is expected by 21 months, and combining words in short sentences at 2 years."

[4] Beth L. Wellman, Ida Mae Case, Ida Gaarder Mengert, and Dorothy E. Bradbury, "Speech Sounds of Young Children" in *University of Iowa Studies in Child Welfare* (1931), 5:2.

are many interesting and detailed studies of phonetics, syntax, vocabulary, and other aspects of speech development.[5]

It is often overlooked that speech is an extremely complex skill, one of the most complicated that the average person ever acquires. Because everybody talks we tend to take for granted this amazingly difficult performance. It is only because we begin at birth the vocalization and the movements of the lips and tongue and jaws that are necessary in speech, and because we practice these endlessly for many months and even years, that we are able gradually to learn to talk and to increase the fluency and the clarity of our speech. The word "church," for example, requires 20 different adjustments of the lips, tongue, larynx, and jaws. These adjustments must occur in correct sequence and must be made precisely. Yet the word requires less than a quarter of a second to speak, which means that the average time available for each of the 20 necessary movements is barely over 1/100 of a second! Other examples could be given of the sheerly technical, mechanical requirements of everyday speech. These exacting demands plus the mental processes of forming ideas and finding words for them make the process of *learning* to talk a complex matter. The word "learning" is emphasized to indicate the nature of the process—it is in every sense a matter of learning, just as much so as with any activity or subject that is studied in a more formal way in later life.[6]

Not all children achieve two or three words by 18 months of age, nor do they all form simple sentences by 24 months. There is much variability even among normal children, with a "normal child" being here defined as one who develops clear and intelligible speech by the time he enters school without any special attention being given to his speech.

At what point should a child be regarded as being significantly delayed in his speech development? We have listed several stages in the early development of speech—vocalization, single sounds,

[5] An excellent and comprehensive review of early speech development is that of Dorothea McCarthy, "Language Development in Children," in Leonard Carmichael, ed., *Manual of Child Psychology*, 2nd ed. (New York: Wiley, 1954), chap. 10. The bibliography cited runs to more than 750 items.

[6] A particularly interesting and valuable book dealing with this general problem, a book especially suitable for parents, is Charles Van Riper's *Teaching Your Child to Talk* (New York: Harper & Row, 1950). See also Van Riper's *Your Child's Speech Problems* (Harper & Row, 1961) and Margaret C. L. Greene, *Learning to Talk* (Harper & Row, 1960).

babbling, single words, jargon, two-word combinations, simple sentences. Which of these is most important may be debatable. Apart from theoretical considerations, however, a practical definition of retarded speech must be stated in terms useful in dealing with children and their parents. Ordinarily parents seeking help for a child whose speech is delayed state their complaint in such terms as "He doesn't talk." When they are asked to give more details, they may say that the child says no words at all or that he has only a few words they can readily list. Less often the complaint is stated as "He doesn't talk much," or "He doesn't make sentences." It seems best, therefore, to define speech retardation in terms of the use of single words and word combinations.[7]

Although normal variability makes it difficult to set up a rigid criterion, we shall classify as a case of retarded speech development any child whose speech is 12 months behind the standards we have mentioned. That is, if a child is not saying single words by 24 months he is significantly retarded in speech development and should be studied to discover the cause of his delay; if he is not using simple sentences by 36 months he is again significantly retarded and deserving of study. The problems to be discussed in this chapter will be limited to these two types of delay in speech. Children who are slow in achieving clarity of articulation are considered in the chapter on disorders of articulation (Chapter Three).[8]

CAUSES OF RETARDED SPEECH DEVELOPMENT

Mental retardation The commonest cause of slow development of speech is mental retardation or mental deficiency. Speech

[7] McCarthy, *loc. cit.*, and others have pointed out the difficulties of determining the exact time of appearance of the infant's first word. These difficulties do not invalidate a criterion of delayed speech stated in terms of age of use of single words. Even greater practical difficulties would attend the application of other possible criteria, such as the number of phonemes used in babbling and the amount of jargon.

[8] Various approaches to the measurement of speech development and to the evaluation of factors possibly related to speech retardation in specific cases have been presented systematically by Darley, *op. cit.*, and in his later book, *Diagnosis and Appraisal of Communication Disorders* (Englewood Cliffs, N.J.: Prentice-Hall, 1964), chap. 2. See also Nancy E. Wood, *Delayed Speech and Language Development* (Prentice-Hall, 1964).

is a learned process, and if the child finds all learning difficult, he will find slow going also in acquiring the complex skills of speech. In general, the degree of speech retardation parallels the degree of mental deficiency. Of course, there are many exceptions to this rule. Some children whose intelligence is in the border zone between the low normal and the slightly retarded have great difficulty in learning to talk; others who ultimately turn out to have severe degrees of mental retardation show a pattern of speech development that is not markedly deviant from the normal in the early years of life. Such exceptions are uncommon, however, and their infrequent occurrence does not disprove the general rule.

The majority of children who are markedly slow in developing speech will be found to be mentally retarded but in the past much harm has been done by assuming that all children with delayed speech were "feeble-minded." Many children of average intelligence or better, whose delayed speech was caused by some other condition, were diagnosed as "feeble-minded" and placed in institutions. These mistakes were deplorable and caused untold harm and unhappiness, but one must not make the opposite sort of mistake and with unwarranted optimism assume that every child with delayed speech can be made intellectually normal or nearly so by speech training. Of course it is possible to improve the speech of a mentally retarded child by intensive training, and it is also possible to improve his intelligence test scores somewhat. Only infrequently, however, are these changes indicative of genuine improvement in the child's ability to make his own way.

The causes of mental retardation are numerous. Although a detailed discussion of them would be outside the scope of this book, we can mention some of the more important conditions. Injuries to the brain, in addition to having other effects, may produce mental retardation of some degree. Such injuries may occur before, during, or after birth, and may be caused by many different agents. Brain injury at birth, from hemorrhage or anoxia, can have mild or severe ill effects on the baby's potentiality for mental growth. Various illnesses of the infant may affect the brain. Many—probably most—children with mental retardation have no history suggesting brain injury, and we do not know why their intelligence is markedly subnormal. Serious

degrees of feeble-mindedness accompany certain congenital conditions.[9]

For the purposes of our discussion here, however, it makes little difference what caused the mental retardation producing the delay in speech development. This would not be true if it were possible to treat one or more types of mental retardation and by so doing make possible normal mental growth. There have been many attempts to improve the intelligence of feeble-minded patients by operations, drugs, or other forms of treatment; none has yet been successful. When phenylketonuria, commonly referred to as "PKU," is diagnosed in the first one or two weeks of life, a special diet will prevent brain damage and consequent retardation; once the damage has occurred, it is irreversible.

The existence of a severe degree of mental deficiency in a given child may be obvious. Accurate early diagnosis of less marked retardation is far from easy and requires trained and experienced persons. Every child with delayed speech development should have a psychological test carried out by a qualified clinical psychologist. It is, of course, difficult to test a child with little or no speech, but a skillful psychologist can make a valid estimate of the child's intelligence.

A careful and detailed history of all aspects of the child's development is just as important as the psychological test. Often such a history gives unmistakable clues pointing toward mental retardation. There are so many such clues that mention can be made of only a few. Marked delays in rolling over, sitting, standing, and walking are usually important, though they do not

[9] For example, abnormalities of metabolism, such as cretinism and phenylketonuria, cause severe mental retardation. Developmental anomalies such as hypertelorism, microcephaly, and many others are associated with mental deficiency; so also are chromosomal abnormalities that have been elucidated in recent years. The most recent complete medical and behavioral classification of mental deciency is found in *A Manual on Terminology and Classification in Mental Retardation*, prepared by Rick Haber and published as monograph 2, a supplement to *American Journal of Mental Deficiency* (1959), *64*:111. Genetic studies have already rendered some of the medical etiological classification obsolete, but no better work has yet (1966) appeared. See also Richard L. Masland, Seymour B. Sarason, and Thomas Gladwin, *Mental Subnormality: Biological, Psychological, and Cultural Factors* (New York: Basic Books, 1958).

The Perinatal Research Branch, Richard Masland, director, of the National Institute of Neurological Diseases and Blindness is conducting a study involving, among other problems, birth defects and mental retardation. Reports from this study will be of great interest.

always indicate mental retardation. Highly significant is the lack of ability to play with other children. This is usually stated in a positive way by the parents—"He likes to play by himself." A lack of ability in verbal comprehension may go entirely unnoticed by the parents, who often insist that "he understands everything you tell him," and then go on to mention that "he won't sit still for stories." Not every child of 2 or more who fails to enjoy being read to is mentally retarded, but one must strongly suspect such a possibility in any child who simply refuses to listen to stories. An odd episode in the development of many mentally retarded children is the appearance of a few words which are used for a few days or even several months only to disappear and never return.[10] Why a few words may appear at a nearly normal time and then drop out is not clear, but regression occurs also in other aspects of the behavior of mentally deficient children. Whenever such a history is given, one may be almost certain that the child is seriously retarded mentally.

The diagnosis of mental deficiency is a serious matter with many long-range implications for the child. It may be used by a school system as a basis for excluding a child from school on the grounds that he is unable to profit from education or, if not excluding him, then for assigning him to a special class. The diagnosis should not be made on the basis of an I.Q. alone; no competent worker puts sole reliance on a test score. On the other hand, mental deficiency should never be diagnosed without adequate psychological examination. Needless to say, there must always be thorough medical study.

When a child whose speech is retarded is found to be mentally deficient, the question always arises as to whether he should be given speech therapy. This decision must always be made in the light of all relevant circumstances rather than in terms of rigid rules. If the mental deficiency is extreme, one can scarcely consider seriously giving speech therapy with expectation of significant results. If the degree of deficiency is slight, and especially if the child has abilities that make him a potentially useful member of society, it would be hard to refuse to help him. Most school speech clinicians have such heavy case loads that they are

10 Spencer F. Brown, "A Note on Speech Retardation in Mental Deficiency," *Pediatrics* (1955), *16*:272–273.

reluctant to include children who seem mentally incapable of profiting from remedial speech instruction. The parents of many retarded children are able to work at home on the child's speech with the help of occasional meetings with the speech clinician. In general, it may be said that much the same considerations that govern the placement of the mentally retarded speech handicapped child in school apply to the decision as to whether he should receive speech therapy.

Hearing impairment For centuries it has been understood that persons who are born deaf do not learn to talk or, at least, not without special training. The common term "deaf-mute" implies this fact. But it is not always easy to be sure that a child cannot hear. In the experience of many clinicians, at least half the parents of deaf children between the ages of 2 and $2\frac{1}{2}$ do not complain that the child does not *hear*—they are concerned because he does not *talk*.

What is particularly confusing to the parents—and often to teachers and others as well—is that the child may hear some sounds and not others. He is often misjudged as being inattentive or uncooperative. The remark, "He hears perfectly well when he wants to," should immediately make one suspect that a serious hearing loss may be present. In some cases the child hears low-pitched sounds such as the rumble of a truck, the growl of a dog, the low notes on the piano. But he cannot hear the higher-pitched sounds which are necessary for the understanding of speech. Since he cannot understand the speech of others, he does not learn to talk himself. He hears the speech of others only as noise and not as meaningful words.

Every child with delayed speech should have a hearing test. If the child is only 2 or 3 years old, it is not easy to test his hearing, but with patience, skill, and proper instruments it can be done.

In Chapter Eight the diagnosis and treatment of children with various types and degrees of hearing losses are discussed in detail. It is important to mention here that many of these children come to the attention of the teacher or the speech specialist because they are retarded in speech development.

Motor difficulties In some instances a child with normal intelligence and hearing fails to talk because of unusual difficulty in controlling his tongue, lips, palate, or other structures used in speech. Such inability to control the speech organs may take the form of a partial or complete paralysis of the palate, for example, or of the muscles of the throat. When throat muscles (constrictors of the pharynx) are paralyzed, there is difficulty in swallowing. Paralysis of the soft palate may produce nasality or regurgitation of liquids through the nose. There may be no paralysis but rather a serious incoordination, so that the child cannot have any idea what will happen when he tries to move his tongue in a given direction. The technical term for this disorder is "dysarthria," which is defined as impaired articulatory ability caused by damage to the nervous system.

We have previously touched on the complexity of the speech act and the extreme delicacy of neuromuscular coordination required to produce normal speech. The sheerly mechanical and physiological difficulties of learning to talk are so great that one sometimes wonders how anyone ever manages it. When these difficulties are multiplied by the handicap of some degree of paralysis or incoordination it is easy to understand why the child finds that learning to talk is extremely hard. He may stop trying or he may continue despite the failure of his efforts.

The damage to the nervous system causing dysarthria may be the result of many factors. Some examples of these were given in the discussion of the brain injuries that may result in mental retardation. Depending on what parts of the brain are affected, injuries may be followed by mental deficiency, hearing loss, blindness, paralysis, incoordination, behavior disturbance, and other unfortunate consequences. In some cases the damage is apparently confined to a small area of the brain, and the effects appear in only one aspect of behavior, as in motor ability (paralysis, for example) or in deafness. In other instances the damage is more widespread. It would be quite possible for a brain hemorrhage or a lack of oxygen during and after birth to produce in a single child mental retardation, hearing loss, and partial paralysis of the speech organs, any one of which conditions would be sufficient to cause speech retardation.

The strength of the drive to communicate verbally is seen in the fact that most children with motor speech difficulties continue to try to talk and generally manage to make considerable progress on their own. They may do well enough so that they are never considered to have retarded speech development, though they usually need remedial help with articulation, voice, and possibly other aspects of speech. If they make little or no progress, they fall into the retarded speech group. Any deficiencies in intelligence or in hearing, of course, complicate the problem.

The treatment of the speech retardation of children whose difficulties stem from brain damage should be undertaken only by persons with advanced training in speech pathology and by them only in consultation with medical specialists. Although this is the ideal arrangement, we must recognize that many of these children cannot get highly specialized clinical help. One cannot endorse attempts at treatment by untrained personnel, no matter how well-intentioned, unless there is supervision by qualified and experienced specialists. In many instances there has been successful remedial work carried out by a mother or nursery school teacher with monthly visits to a speech clinic for detailed instructions for the next steps in the retraining program. Accurate medical diagnosis, including neurological consultation, is an important prerequisite to proper planning of the speech retraining. The speech techniques that the mother or the teacher may be asked to carry out are in many respects similar to those described in the chapter on disorders of articulation (Chapter Three), but in every case there must be special modifications of the methods to suit the individual child.

These three factors—mental retardation, hearing deficiency, and impaired control of the speech organs—must be considered in evaluating every child whose speech development is retarded. Appropriate examinations by qualified persons can almost always be arranged, though often at considerable trouble and expense. Without such studies the diagnosis of any case of speech retardation is a matter of guesswork, luck (often bad), and desperation.

Environmental causes of delayed speech In some instances the explanation for delay in speech development lies chiefly in the environment rather than in the child himself. The child

possesses normal or above normal intelligence, adequate hearing, and normal control and movement of all the structures used in speech. Yet the child has reached the age of $2\frac{1}{2}$ years without being able to speak single words. Or he may be 4 years old and still unable to form simple sentences. So we turn to a study of his home situation, his play associations, and other factors in an attempt to understand why he is not talking. The techniques here are not standardized tests or electrical instruments but rather detailed questioning of the parents and other informants. The results are not expressed as numerical scores, but in terms of careful description of the relevant facts.

(It should be made explicit that ordinarily a diagnostic study of a child with retarded speech development does not actually proceed in the order in which the causes of these problems have been discussed in this chapter. We do not first give a psychological test, then evaluate the hearing, then test the mobility and the control of the speech mechanism, and finally take a case history. The best practice is precisely the reverse of this order—first a most detailed history is taken covering not only speech but also every other major area of the life of the child and his family; then the child is given careful physical and speech examinations; and finally, in the light of the facts uncovered, various special tests may be administered.)

Among the questions that are asked of parents are those designed to elicit information about two important aspects of the learning process as it relates to speech—*motivation* and *stimulation*. The process of learning to talk is a long and difficult one, and if it is to take place at a normal rate there must be adequate motivation. Now, the motivation of all learning can be reduced to the basic elements of reward and punishment. We learn in the hope of reward or in the fear of punishment, and often both elements are present. The reward (or the punishment) may be immediate or remote, it may be tangible or intangible, it may be transient or relatively permanent, it may be reversible or irreversible. There may be many rewards involved in the motivation of a single learning situation and also many punishments.

When we consider that speech learning goes on over a period of many years, with the most rapid and significant learning

extending over the first two or three years of life, it is clear that literally thousands of small rewards and punishments must be involved, and it seems hopeless to try to get a clear understanding of the motivational factors. When speech learning has failed markedly, how can we discover whether there has or has not been proper and adequate motivation? There are several facts that help bring at least some elements of order into this complicated confusion. The first is simply that although there are thousands of little episodes involving speech learning, many similarities run through them. What is true of one situation is also true, not necessarily for all the rest, but certainly for many hundreds of similar situations. Second, insofar as the parents make conscious attempts to teach their child to talk, the element of reward is of far greater significance than the element of punishment. For example, the parents may be trying to get a child of 18 months, already somewhat slow in his speech development, to say a single word—"mama," or "dada," or whatever. Obviously, it will do no good to punish the child for not saying the word. All they can do is reward the child for whatever attempt he makes. What sort of reward? A smile, a pat on the head, "That's a good boy," a proud glance—whether they are aware of it or not, the parents are importantly rewarding the child by these and a hundred other manifestations of affection. The normal loving relationship between parent and child yields dozens of valuable emotional rewards for the child every day—rewards given spontaneously and unconsciously. Parental disappointment and irritation when weeks and months pass without any words may be a punishment, but these are less openly and directly expressed.

It is not easy to discover exactly what sorts of reward the parents have used in their efforts to develop speech in the child. Dozens of times a day one parent or the other may be involved in some sort of potential speech learning situation with the child, and the subtleties of these situations usually escape the participants. We can take advantage, however, of the fact that there is another area of family life in which the manipulation of reward and punishment can be studied rather easily—the area of discipline. We make the assumption that if the parents have become badly confused, uncertain, or maladroit in their handling of reward and punishment in this relatively clear-cut matter of

discipline, they are likely also to be misusing rewards and punishments in other areas including speech learning. If they are handling reward and punishment effectively and consistently in their discipline of the child, they are probably doing so in other areas as well. This assumption seems reasonable, and it has proved useful clinically.

A most illuminating case is that of Bruce G., a boy of 38 months who had a vocabulary of about six words, only one of which he used to any extent. This word was "no." To any and all requests from his parents or others he would answer, "No." He played with several other children of his own age and seemed to get along well with his limited speech, but occasionally would get into disagreements in which his sole response was "No." Bruce had no siblings and lived with his parents in a pleasant small home in a neighborhood of relatively new houses.

When he was examined, he was found to be normal physically, with excellent nutrition and development. He was not negativistic during the speech examination, smiling and pointing to pictures, but neither would he say any words. He cooperated well on the hearing test and gave normal responses. He tested in the bright normal group on the psychological test.

Hearing and psychological tests were done as precautions against overlooking significant information in these areas, but the history had already provided a clue that seemed sufficient to explain the child's failure to talk. Inquiries about discipline brought out that the parents were "always very reasonable" with the child, and "wanted him to understand everything." A typical episode follows: The father came home from work, said "Hello," and asked the boy to bring him a broken toy he had promised to fix. Bruce said "No." The father then picked him up and took him on his knee; significantly, the child did not resist this. Then the father began a discourse that went something like this: "Look, Bruce, I work hard all day for you. Now when I come home and ask you to do something, you ought to do it. I do things for you. You ought to do things for me. Daddy loves you and wants to do things for you. Don't you see why you ought to do what Daddy asks you? This is why—you see, all day I work hard just for you and Mommy . . ." and so on, for about 20 minutes. All this time the father was patting the boy and showing

him great affection. Finally Bruce did what he had been asked to do 20 minutes before. Similar episodes occurred several times a day in relation to all sorts of major and minor matters.

It was pointed out to the parents that unwittingly they had fallen into the error of rewarding Bruce for bad behavior. The long "explanations," almost always conducted with Bruce on the lap of one of the parents and the recipient of frequent physical and verbal demonstrations of affection, were actually very pleasant for the child. All he had to do to touch off such a pleasant scene was to say "No," and stick to it. The suggestion was made that the parents arrange things so that there was no such rewarding of undesirable behavior, and a rather thorough analysis of the family's system of discipline was made to help avoid this error. Other recommendations were minor and included no direct effort to elicit speech in any situation. Within two months the child had increased his vocabulary amazingly, and in another month he was saying sentences.

The inference is that by this indirect approach—adjusting the badly warped system of rewards in the area of discipline and discussing the problem of reward and its relation to learning—the parents were enabled to use rewards effectively in motivating Bruce's speech learning.

Few cases present the motivational factor so clearly, but there are many circumstances for which factors of motivation play a part in retarding speech development. If the rewards are inadequate or given inappropriately, speech learning proceeds slowly—and sometimes scarcely proceeds at all.

Mention is often made of the "overprotected" child as one who may be slow in speech development. One aspect of overprotection is said to consist of anticipating the child's desires and satisfying them so that he "has no need to talk." Such an explanation makes rather naive assumptions about motivation, and yet it is true that overprotected children may often be delayed in speech. When the behavior of the parents toward the child in areas other than speech is examined, it is apparent that their system of rewards and punishment has become badly confused. Rather, they have no system at all—they reward the child indiscriminately and are reluctant even to consider withholding any reward. The rewards thus lose their effectiveness and, in fact,

can no longer be properly regarded as rewards. It is hard to prove that the motivational elements in speech learning situations have become confused, but such an assumption seems warranted. If such be the case, then instructing the parents to "Make the child say what he wants," "Don't give it to him till he asks for it," seems ill-advised and irrelevant. Rather, a careful study of rewards and punishments in areas other than speech, together with systematic efforts to reward any speech efforts made by the child, almost always results in improvement. It is particularly important in dealing with overprotective parents to point out that the rewards to be given consist of warm and accepting approval of the child's efforts at speech but not exaggerated and effusive praise. The way parents feel is more important than what they say. Nonverbal rewards are more highly motivating than verbal ones.

In a few cases of retarded speech, the most important factor seems to be a marked degree of parental rejection which seems to affect speech learning adversely—chiefly through depriving the child of proper rewards for his speech efforts. Some rejecting parents are dimly aware of their lack of love for the child, and in an effort to conceal this lack from themselves as well as others, they behave in the smothering, overprotective manner we have just mentioned. Other parents are more candid with themselves about their lack of affection for the child. They may neglect him and treat him with a good deal of indifference. Under such circumstances there may not be enough rewards for normal speech learning.

Occasionally it is found that the course of speech development comes to a more or less abrupt halt at the time of the birth of a younger sibling. Under the best of circumstances the birth of a new baby constitutes a threat to the older child. The threat is usually not serious, however, and because the parents have ample love for all their children, the problem remains only a potential and temporary one. In every home there are occasional displays of jealousy of the younger child, and all through childhood and adolescence there are bound to be quarrels and conflicts of various sorts. These normally do not cause undue concern to anyone. There are, however, instances in which parents are not able to give the older child the reassuring love he needs when faced with

the new competitor. This means that the arrival of the younger sibling is much more than a potential threat. Among other changes that occur rather suddenly, the parents may no longer give the older child enough evidence of love and approval—not enough reward to continue to give incentive to his speech attempts. The result may, in rare cases, be a sudden stop in speech development and even a regression to earlier stages. It is as if the older child were observing what the baby does to get affection, then learning to do likewise. From what has been said it will be clear that an essential part of the approach to any such problem is counseling the parents, and this may be done by a qualified speech clinician, a psychiatrist, a psychologist, a social worker, or other trained specialist. Speech retraining for the child will usually not be necessary.

The examples which have been given by no means exhaust the types of situations in which a child's learning to talk is impeded because of motivational factors. In considering any case of speech retardation, we always need to take into account the matter of reward in speech learning. Sometimes this is the only plausible explanation one can find for the difficulty. In other cases lack of reward acts to intensify the effects of another cause. No matter what other conditions may be present, it is always wise to see if the amount of reward for speech efforts could be increased and to consider generally the handling of rewards and punishments by the child's parents. We must also realize that there is tremendous individual variation in the need for rewards and in the effectiveness of them. The motivation may seem to be adequate, but if it can be made still better, we would be making a serious mistake not to take advantage of every possible beneficial change.

The amount of *speech stimulation* is the other environmental factor of great importance that must always be taken into account. Some of the importance of speech stimulation is generally known and taken for granted. Other aspects are less widely understood.

The child learns to speak the language of his parents because that is the language with which he is constantly stimulated. He tends to reproduce the dialect, the grammar, and often the individual mannerisms of speech of his parents or other adults with whom he is closely associated. These facts are generally appreciated.

Extreme lack of stimulation results in failure of development of speech. There are a few cases on record of children having been raised by animals—the "Wolf Boy" and others.[11] These children had no speech because they had never heard human speech; to use the terminology of this discussion, they had not had any speech stimulation. Other rather extreme instances may be cited. Mason[12] reported the case of a 6-year-old girl who had lived her entire life shut up in an attic with her deaf-mute mother and who had no speech whatsoever except cries and grunts. The lack of speech of the deaf child may be regarded as a special case of lack of speech stimulation.

There are many less spectacular cases in which the normal development of speech is seriously interfered with by insufficient stimulation. An example of such a case is Polly M., a child of 34 months who was studied because her speech was confined to only a few single words which she used infrequently. The history disclosed that Polly had been entirely normal in physical development, had walked at 13½ months, had begun to use her first words at 23 months, and had made almost no further speech progress. She had had no serious illness.

Polly lived with her parents on the second floor of a duplex apartment. She had no siblings. The family who lived downstairs didn't like children and complained to Polly's parents about the noise she made. Since Polly was a quiet child, the parents attributed the complaints to the generally disagreeable nature of their neighbors, but they tried to keep her as quiet as they could. The house was set among business and factory buildings, there were few other houses within a block, and no other children lived in the area. Even if there had been other children, the little girl could not have played in the yard with them, for the downstairs tenants would have objected.

The father worked as an office manager in a busy firm, and his work required him to leave the house every morning before Polly got up. He put in an 11-hour day at work and got home in the evening after Polly had eaten. Tired and hungry, he had little

11 See, among others, Gesell, *Wolf Child and Human Child* (New York: Harper & Row, 1941); Jean Marc Gaspard Itard, *The Wild Boy of Aveyron* (1801), translated by George and Muriel Humphrey (New York: Appleton-Century, 1932).

12 Marie K. Mason, "Learning to Speak after Six and One-Half Years of Silence," *Journal of Speech Disorders* (1942), 7:295–304.

desire to postpone his dinner by talking or reading to Polly, and the mother tried to hustle the child off to bed soon after she had greeted her father. Since he worked six days a week, Polly's father really saw her only on Sunday, and then church, Sunday School, and visits to grandparents occupied most of the day.

Polly's mother was a slender, tense woman who kept her house spotless despite its smoky industrial surroundings. She cleaned the apartment thoroughly every day. Preoccupied with her meticulous housework, she paid little attention to her quiet, undemanding daughter. It had occurred to her that she ought to read to Polly, but she had not found time for that in her schedule. Since Polly didn't talk, her mother talked very little to her.

Polly was found to be in good physical condition, aside from being a little underweight. She had normal control of her speech organs. Her psychological test score placed her in the average intelligence group. Her hearing test response was normal.

Polly's parents were told how normal their daughter was on all these tests; it was also pointed out that her environment was greatly deficient in speech stimulation. This had to be done cautiously, for Polly's mother was an intelligent and sensitive woman who had become engrossed in housework; she was horrified when she realized that her daughter had been so markedly deprived of normal speech stimulation.

It was suggested that the mother start at once to read stories to Polly every day and that the father read her one story in the evening before she went to bed. The amount of reading was to be increased to an hour a day as fast as Polly would accept it (which turned out to be less than two weeks). In addition, the mother was to try to engage in as much talking with her daughter as she could. She was urged to get Polly to "help" her in as many household tasks as possible and talk to the child about all the things they were doing together.

New words were heard from Polly within a week after this program was begun and she made steady improvement thereafter. In less than four months she was using a few simple sentences. In about 10 months the family moved to a new house in a neighborhood where there were many children, and though Polly's speech had not caught up to the average for children of her age (45 months at the time of moving), she had made enough progress to

be able to play well with other children and use speech successfully with them. In another eight months her speech was considered approximately normal for her age.[13]

This story of Polly is essentially like other stories of hundreds of children who live under circumstances that deprive them of adequate speech stimulation. These children usually are not neglected in the ordinary sense of that term. Their parents are well-meaning people who have not realized the extent to which their preoccupation with other matters deprived their children of the chance to hear speech and to use it themselves.

There is great individual variation in the amount of speech stimulation different children require, just as there is in the amount of motivation. Some children who receive very little speech stimulation during their early years manage to develop speech at a rate not greatly different from the average. In other cases we may find no apparent reason for delayed speech development; everything seems normal, including the amount of speech the child hears. Yet when a systematic effort is made to increase the amount of stimulation, the child begins to respond almost at once. It is difficult to prove that the increased stimulation deserves the credit for the speech improvement, but in many cases the relationship seems clear. Accordingly, a marked increase in speech stimulation is a recommendation that may be made for almost every child with retarded speech development. The presence of other causative factors must not make us forget that inadequate stimulation also can be present and can aggravate the effects of these other factors.

The prescription of "increased speech stimulation" is far too general. In order to help the child, the suggestions given his parents must be specific. They need to be given many examples of how they can increase the amount of talking they do to the child—not merely in his presence but *to* him. Some parents seem to feel they must wait to talk to the child until he can hold up his end of the conversation. They need to be shown that talking to the child is crucially important, beginning in the earliest days of his life. These earliest days are now long past if the child is considered a retarded speech problem, but explanations of the

[13] A similar case, that of Roger, is described on pp. 128–129.

value of stimulating the very young infant with speech provide an *a fortiori* argument for talking a great deal to the older child.

The importance of reading to the child as a means of speech stimulation needs to be stressed. Reading to a child from an attractively illustrated story book provides a sort of stimulation which, though not better than conversation, has special values. The child can hear a given story read over and over again. He comes to anticipate almost every word and soon to form the words himself. The pictures and the story are associated, providing increased stimulation. The person doing the reading is likely to be more careful of his speech than he is when he is engaged in ordinary conversation. Being read to is far from a passive one-way process for a child. He can and usually does interrupt frequently, and his interruptions should not be discouraged.[14]

Watching television or listening to the radio, on the other hand, is a passive and one-way affair. It is inaccurate and unjustified to ascribe to radio or television any intrinsically harmful influence on the course of early speech development, but it is also a mistake to regard either radio or television as a substitute for the other direct forms of speech stimulation we have been discussing. In some cases, because of sheer time limitations, it is necessary to suggest that the child spend less time watching television and more time listening to his parents read to him.

We can understand the adverse environmental influences on speech development in terms of inadequacy of these two crucial factors, motivation for speech learning and speech stimulation. Certain situations that are sometimes regarded as special problems can be explained in these terms. For example, it has long been noted that children raised in orphanages tend to be somewhat retarded in speech. But conditions of life in an orphanage are such that there could be few effective rewards to serve as incentives for speech learning, and there could also be relatively little speech stimulation, at least on an individual basis. Fortu-

[14] Johnson, in *Stuttering and What You Can Do About It* (Minneapolis: University of Minnesota Press, 1961), pp. 167–168, suggests that when parents read to their child, especially at bedtime, he gains not only new words and understandings but also new and special pleasures "in his own speech. After all, speech is like a wand, bringing back again the past we talk about, and it is most rewarding when the past it brings back is full of joy and wonder." See also Irwin, "Infant Speech: Effect of Systematic Reading of Stories," *Journal of Speech and Hearing Research* (1960), 3:187–190.

nately, this is no longer as great a problem as formerly for there has been a trend over several decades away from orphanage placement of children and toward placement in foster homes. Some of the remaining orphanages are more adequately staffed than was formerly the case. Even so, orphanage children still tend to be somewhat slower in speech development.[15]

Other causes of speech retardation One of the minor but demonstrable causes of delayed speech is severe emotional shock. Speech may be developing normally in a child who suffers a harrowing experience, a great fright, the sudden loss of a parent, or some other such shock. From that point on, the speech fails to continue developing normally and may even regress. This is clearly not exactly the same sort of problem as that of markedly slow development of speech from the beginning, but since retarded speech is a loose category defined in terms of its manifestations and not in terms of cause, perhaps one should not object to the inclusion of some children whose normal development is thus suddenly arrested. It must be pointed out, however, that while severe shock does infrequently have such an effect on speech, its importance is often greatly exaggerated. Children are often brought to speech clinics with the story that their difficulties are due to some severe shock, only to prove to be mentally retarded, deficient in hearing, or lacking in proper environmental factors for good speech learning. Only in rare instances does careful study fail to reveal another and more likely cause for the retarded speech.

Autism is a severe disturbance of childhood in which there is little or no communication with others. The child has literally withdrawn from society into a world of his own, and lack of speech is only one symptom of his disorder. His behavior seems never to be responsive to or appropriate for his surroundings, but is an expression of his inner, isolated, peculiar self. These children, fortunately few in number, require psychiatric treat-

[15] Many studies have shown the adverse effect on speech development of orphanage or similar environment. See, for example, Arthur J. Brodbeck and Irwin, "The Speech Behaviour of Infants without Families," *Child Development* (1946), *17*:145–156; William Goldfarb, "Effects of Psychological Deprivation in Infancy and Subsequent Stimulation," *American Journal of Psychiatry* (1945), *102*:18–33.

ment or at least psychiatric evaluation, and speech therapy is usually inappropriate except in coordination with such psychiatric procedures as may be validly indicated.[16]

WHAT THE CLASSROOM TEACHER CAN DO

The discussion in this section is offered with considerable hesitation, for it is the author's opinion that few if any children with significantly retarded speech belong in conventional classrooms, even in kindergarten. Some are placed there, however, and via "social promotions" find their way beyond the first grade. Such circumstances are far from ideal but do not preclude efforts to help the child.

Cooperating with the speech clinician Children with retarded speech development, almost all of whom are found in the first grade and kindergarten, warrant special consideration. Whether or not the remedial speech teacher ordinarily works with youngsters in kindergarten, during the early weeks of the school year there is much to do in the way of examining children throughout the grades, setting up schedules, and the like; in the ordinary course of things it might take several weeks before instruction of a specific child could be started. But during those first weeks of school valuable time may be lost, or even some harm might be done, if the child with retarded speech gets no help of any sort. It is particularly important that a child with a special problem get off on the right foot in school. Therefore, it is the first responsibility of the classroom teacher to notify the speech clinician immediately if she discovers such a case and ask for specific suggestions for dealing with the child until the clinician is able to see him regularly.

Most of what the teacher can do in these first weeks consists in observing the child, collecting information that will help in identifying the cause of the problem. She can make observations that will throw some light on the possible influence of some of the causal factors that have been mentioned. For example, she can compare his behavior with that of the others in the class

[16] For authoritative descriptions of autism, see, among others, Leo Kanner, *Child Psychiatry*, 3rd ed. (Springfield, Ill.: Thomas, 1957).

with regard to learning ability. How quickly does the child grasp simple instructions? Does he seem to remember what he has been told? Does he seem as mature as most of the other children in the class? Evidences of impaired hearing can be looked for. Does the child watch the face of the speaker carefully and often misunderstand when he cannot see the speaker's face? Is he less responsive to soft sounds than other children are? The social behavior of the child is important. How does he get along with the other children? Does he make any efforts to talk to them? How much does he try to talk in the classroom? If his vocabulary is limited, exactly what words does he say? How clearly does he say them? These and other similar observations will be valuable to the speech specialist who, after he has begun therapy, can make appropriate suggestions for the classroom teacher.

If there is no speech clinician The school's lack of a competent speech clinician to deal with a child with retarded speech places the classroom teacher in an embarrassing dilemma. She is faced with a child whose disability may be a distracting influence in the classroom. The reactions of his peers to his lack of speech may in some cases be far from tolerant and helpful, and an already serious problem thus may become worse. For the sake of the child and of the others in the class, the teacher wants to do something. But retarded speech development is far more difficult to deal with than are most of the other speech problems a kindergarten teacher may encounter. It is a problem that taxes the understanding and skill of the most experienced speech pathologist. Realizing this, the classroom teacher understandably feels hesitant about attempting anything at all with the speech retarded child.

The course of action in this situation will naturally depend on the circumstances, but a few generalizations may be offered. The first and most obvious one is that the classroom teacher urge that skillful psychological and hearing testing be carried out. Children with delayed speech should be studied for purposes of evaluation and special training by the time they are 3 or 4. If the child is entering kindergarten without ever having received such attention, he deserves to have it without further delay. If energetic efforts are made, it ought to be possible to get hearing

and psychological tests arranged for in a short time. Physical examination should take much less time; special attention should be given to the matter of neurological control of the speech organs. If at all possible, a thoroughgoing speech and language evaluation should be obtained in a speech clinic. A visit to the child's home will yield information regarding environmental factors that might have interfered with speech learning.

If all these lines of approach are pursued, the basis of the speech retardation will usually be discovered. The measures to be taken have already been sketched.

It remains to be mentioned that because this book is concerned with speech problems, we have stressed here the speech aspects of the retardation of these children, but many of them have other kinds of language retardation as well. A child who at 3 or 4 presents a delay in speech development will often later show marked slowness in learning to read. His ability to express himself in writing may also be found to be poor as he progresses through school. Not all retarded speech development is part of a more general difficulty with language, but this possibility must always be kept in mind. If general language retardation is present, a decreased likelihood of rapid improvement in speech is to be taken duly into account.

THE APHASIAS OR DYSPHASIAS

While this book is primarily concerned with the speech problems of children, a brief review of certain facts concerning aphasia in adults is necessary for achieving a proper perspective on aphasia-like behavior in children.

The term "aphasia" refers to an impairment of symbolic reception, formulation, and expression occurring as a result of an injury to the brain. A recent text defines aphasia as "a general language deficit that crosses all language modalities and may or may not be complicated by other sequelae of brain damage . . . the language deficit itself is characterized by reduction of available vocabulary, impaired verbal retention span, and impaired perception and production of messages."[17] Strictly speaking, the term "aphasia" means total loss or lack of language function and

[17] Hildred Schuell, James J. Jenkins, and Edward Jimenez-Pabon, *Aphasia in Adults* (New York: Hoeber Medical Division, Harper & Row, 1964), p. 113.

since the deficiency or impairment is seldom, if ever, complete, some writers prefer the term "dysphasia," which implies less than total deficit. Out of deference to established custom, we shall use "aphasia" as having essentially the same meaning as "dysphasia."

Aphasia has been studied by neurologists for over 100 years, beginning with Gall and Broca in France. Great advances have been made in the knowledge of aphasia as a result of the study and treatment of soldiers with head injuries in World Wars I and II.

The largest number of aphasic patients are those who have suffered a stroke—a hemorrhage or thrombosis (blood clot) of a cerebral artery. Often such patients have paralysis of the dominant arm and leg. Other patients suffer from a gradual closing off of cerebral arteries as a result of thickening of the lining over a period of years (arteriosclerosis, or "hardening of the arteries"). Head injuries of any sort may produce aphasia as one result, as may surgery for some brain tumors. In rare cases aphasia may be the result of encephalitis.

The symptoms of aphasia, this general deficit that crosses all language modalities, are quite varied. Only a few examples can be mentioned. The patient may not understand the meaning of common single words. He may not be able to respond to any but the simplest commands, whether spoken or written, and perhaps to none. He may not be able to follow the drift of ordinary conversation. He may experience much difficulty in matching pictures to printed or spoken words. He may not be able to grasp the meaning of a simple paragraph. He may find it difficult or impossible to tell or repeat a simple story. He may make errors in spelling. He may be unable to write spontaneously or to dictation. This is only a partial listing of the various sorts of deficits that may be present.

A number of classifications of aphasic patients have been made. In this brief general discussion no classification is presented, but the interested reader is referred to authoritative studies of aphasia.[18]

In arteriosclerosis, the course of aphasia is slow and insidious.

[18] See, among others, Schuell, Jenkins, and Jimenez-Pabon, *op. cit.*, and Joseph M. Wepman and Lyle V. Jones, *Studies in Aphasia* (Chicago: Education-Industry Service, 1961).

Over a period of many months it will be noted that the patient has increasing difficulty remembering names and finding the right word. Gradually little errors of grammar become more frequent. Eventually it begins to become clear that the patient does not understand some of the things said to him, and the indicated receptive impairment slowly proceeds over many months or even years. During the time these language deficits are developing, other serious impairments usually occur—in social awareness, memory, coordination, vitality, sensory perception, and such. The total picture is the sad one of senile deterioration. Aphasic elements are almost always present, but are sometimes overlooked because of the over-all condition.

In the majority of cases—those due to stroke, head injury, surgery, or encephalitis—the course is quite different. Suddenly and dramatically the patient is stricken and left with impaired language and speech. The degree of deficit may be slight, moderate, or virtually total. There is likely to be some improvement as the patient recovers from whatever caused the aphasia, and sometimes the recovery is apparently complete, though this may require many months.

From what has been said about the nature of the causes of aphasia, it is clear that (except for military personnel) a majority of the persons affected are above 60 years of age. Occasionally aphasia, in the sense in which the term is here used, is acquired in childhood, usually as a result of a head injury.

The treatment of aphasia necessarily begins with whatever language functions the patient still has. Those which are relatively unimpaired are strengthened and used as a basis for recovery of other modalities which show greater deficits. Intensive and repetitive stimulation forms a large part of the therapy. Often combined stimulation is used, such as speaking a word and showing the patient the printed word at the same time. The aim is restoration of as much function as possible in all modalities of communication. Some patients recover well enough to resume occupations requiring many complex language skills; others are never able to recover functional language.

In this highly compressed sketch of aphasia we have been discussing acquired aphasia—impairment occurring in persons who once had effective language abilities until they suffered brain

damage of some kind. There is another group of patients who are often referred to as having "congenital aphasia." These are children who have never learned to speak and whose speech retardation seemingly cannot be explained in terms of the factors discussed earlier in this chapter. Sometimes the term is loosely applied to refer to almost any case of retarded speech development. In recent years authorities have come more and more to confine the term to a relatively small group of children whose language development is seriously retarded. When tested with nonverbal tests they show normal or above normal intelligence, or at least do not have sufficient mental retardation to account for the profound language retardation. They seem normal on neurological examination as a rule; if abnormalities are found, they are not of such nature as to explain the problem. (Control and mobility of speech structures are normal.) There is usually evidence of perceptual impairment; for example, the child may be able to follow a simple command but not a more complex one. The visual field may be restricted or the visual perception of movement may be impaired. It is often hard for even an experienced examiner to determine whether a hearing loss exists in these children, but in many cases it can be shown that the hearing is normal or nearly so.

It is sometimes argued that aphasia refers to a loss of language resulting from brain damage and that since these children have had no language to lose the term should not be applied to them. If, however, one is willing to apply the term somewhat more broadly to an impairment of language function, whether congenital or acquired, there would seem justification on two counts to speak of congenital aphasia. First, many of these children show evidence of at least minimal brain damage.[19] The speech structures may indeed function normally, but other neurological deviations occasionally found indicate brain damage of some degree. Many congenitally aphasic children are hyperactive,

[19] See I. M. Allen, "Congenital Aphasia and the Higher Speech Function," *New Zealand Medical Journal* (1961), *60*:28–36. Shulamith Kastein and Edmund P. Fowler, Jr., "Differential Diagnosis of Communication Disorders in Children Referred for Hearing Tests," *Archives of Otolaryngology* (1954), *60*:468–477; A. A. Strauss and Laura E. Lehtinen, *Psychopathology and Education of the Brain-Injured Child* (New York: Grune and Stratton, 1947).

highly distractible, and difficult to control.[20] These symptoms are often found in brain-damaged children whose language may not be seriously impaired; in the language-retarded child they suggest brain damage as the basis of the retardation. Second, it is difficult to imagine any other explanation of the marked language retardation such a child presents. When other possible causes (those mentioned earlier in this chapter) seem to have been ruled out, one is left with a diagnosis by exclusion—congenital aphasia, that is, failure of normal language development on the basis of inferred brain damage, cause and extent unspecified. Admittedly such a diagnosis is unsatisfactory, and one would prefer a diagnosis in terms of an elegant and clear-cut demonstration of the cause. Yet in many medical, psychological, and other problems a diagnosis by exclusion is the only one possible in our present state of knowledge.

The problems of diagnosis of the allegedly congenitally aphasic child are great. The differential diagnosis involves the ruling out of mental retardation and hearing loss, as well as autism, or other psychological or emotional disturbance, as already mentioned, and often cannot be made with certainty.[21] When there is any doubt, a trial period of three to six months of therapy will often clarify matters. Kleffner has emphasized the value of the child's response to teaching as an aid in diagnosis.[22] Sometimes the discovery of family tensions tempts one to make a hasty diagnosis of language retardation on the basis of psychic factors. It is more likely, however, that the presence in the home of a child with serious language retardation is the cause and not the result of family stresses.

No child with congenital aphasia belongs in conventional kindergarten or primary classes. Apart from the obvious diffi-

20 These behavioral impairments make the testing of intelligence and hearing particularly difficult; the results obtained are approximate and often represent the least rather than the most the child can do. Among other discussions of language and behavior of brain-damaged children, see Strauss and Lehtinen, *op. cit.*

21 An excellent discussion of problems of diagnosis is found in William G. Hardy, "On Language Disorders in Young Children: A Reorganization of Thinking," *Journal of Speech and Hearing Disorders* (1965), *30*:3–16.

22 Frank R. Kleffner, "Aphasia and Other Language Deficiencies in Children," in William T. Daley, ed., *Speech and Language Therapy with the Brain-Damaged Child* (Washington: Catholic University of America Press, 1962).

culties for the teacher and the other pupils, the effects on the child himself would be quite serious—frustration, lost opportunities, deprivation, and discouragement. The best placement is in a special class for aphasic children; the rapid spread of such classes across the United States is most encouraging. Therapy for the congenitally aphasic child is in some ways more difficult than that for the child or adult with acquired aphasia, for there is no large body of previously learned language skills to be retrieved. Instead, abilities must be built up slowly. Many of the same principles used with the adult are used here—intensive, repeated, and combined stimulation via whatever channels best reach the child.[23] The outcome may be a child with normal language, able to take his place in the world. This has been claimed, but to the date of publication of this book there have not appeared enough detailed case reports of individual children and documented researches on groups of cases to enable any but the most tentative statements of prognosis.

23 For therapeutic techniques see, among others, Daley, *op. cit.*; Hortense Barry, *The Young Aphasic Child* (Washington: Alexander Graham Bell Association for the Deaf, 1961); Mildred A. McGinnis, *Aphasic Children* (Washington: Bell, 1963).

SEVEN



CLEFT PALATE; CEREBRAL PALSY

In this chapter we shall discuss speech impairments associated with certain physical conditions—cleft palate and cerebral palsy. Speech difficulties found in relation to these two problems constitute a large proportion of the so-called organic speech disorders found in children.

CLEFT PALATE

First let us consider children born with cleft palate and cleft lip (the latter term is preferable, scientifically as well as on grounds of good taste and kindness, to "harelip"). Figures from different parts of the world vary as to the frequency with which these structural anomalies occur. Recent studies show a higher incidence than those done several decades ago, probably because they have been more carefully done, are based on larger

samples, and thus give a truer picture of the incidence of cleft palate births, although many cases go unreported.[1] Figures from Pennsylvania[2] show that one child in every 800 is born with a cleft of the lip, or palate, or both, while data from Denmark[3] give a figure of one in 610 births. One-fourth of the Danish cases had cleft lip only, one-fourth had cleft palate only, and one-half had clefts of both lip and palate; these figures can be generally applied despite occasional variations.

To understand the possible reasons why cleft palates occur we must know something of the development of the embryo. During the early weeks of growth within the uterus, the various parts of the body appear and rapidly assume a form much like that which they will have at birth. At one early stage of development the mouth and nose are one cavity, and there is no upper lip. The upper jaw is lacking except for that portion on the sides of the face back toward the ears. Over a period of several weeks the upper lip and upper jaw are formed by structures growing in from each side and meeting in the midline with a third portion growing downward from the nasal region. In much the same way the roof of the mouth is formed. It consists of the bony hard palate in the front part of the mouth and the soft palate, which is mainly muscle, behind it. The fusion of all these structures starts with the lip and proceeds posteriorly, ending with the soft palate. First evidences of precursors of the upper lip and hard and soft palate appear about the sixth week of fetal life. By the end of the twelfth or thirteenth week the nasal cavity is separated from the oral cavity by the completely formed hard and soft palate.

If there is a disturbance of development in the face region during the period when fusion of the lip, jaw, and palate is normally occurring, the result is some sort of incomplete fusion, or cleft. If the disruption of normal growth begins early and lasts throughout the period when fusion should take place, the child

[1] Samuel Milham, Jr., "Underreporting of Incidence of Cleft Lip and Palate," *American Journal of Diseases of Children* (1963), *106*:185–188. Depending on the source of the data and the techniques used to correct the omission of cases, from 18 percent to 37 percent of cases are not recorded.

[2] L. G. Grace, "Frequency of Occurrence of Cleft Palates and Harelips," *Journal of Dental Research* (1943), *22*:495–497.

[3] Paul Fogh-Andersen, "Incidence of Cleft Lip and Palate: Constant or Increasing?" *Acta Chirurgica Scandinavica* (1961), *122*:106–111.

is born with a cleft involving one or both sides of the upper lip and continuing back through the upper jaw and gum ridge, the hard palate, and soft palate. If the disturbance starts early but lasts only a short time, there is a cleft lip and a normal palate. If it occurs after the lip is formed there is a normal lip and a cleft palate. In this latter case the cleft may involve only the soft palate or both the hard and soft palate. The uvula may be split, short, or absent. Babies born with cleft lips and palates are somewhat more likely than normal babies to have other physical abnormalities also.[4]

Research has shown that cleft lip, whether or not there is also a cleft palate, is an entity different from cleft palate with no lip cleft.[5] There is an important hereditary factor in cleft lip. If either parent has a cleft lip, the chances of one of the offspring having this condition are 2 percent (20 out of 1,000, 200 out of 10,000), compared with 0.15 percent (15 per 10,000) in the general population; after a cleft lip parent has a child with this impairment, the likelihood of succeeding children also having cleft lip rises to 10 to 15 percent (Fogh-Andersen).[6] The probability of transmission of cleft lip to the offspring is increased if the affected parent is the mother.[7] The probability of having a cleft lip child is greater in older parents, and here the age of the father seems to be more important than the age of the mother.[8] It has not been determined whether factors other than heredity are involved in producing cleft lip.

Cleft palate without cleft lip seems to depend less on heredity.[9] There are many other factors that may be responsible for con-

[4] See among others, Theodore H. Ingalls, Irene E. Taube, and Marcus A. Klingberg, "Cleft Lip and Cleft Palate: Epidemiologic Considerations," *Plastic and Reconstructive Surgery* (1964), *34*:1–10.

[5] *Ibid.* See also Fogh-Andersen, *The Inheritance of Harelip and Cleft Palate* (Copenhagen: Nyt Nordisk Forlag-Arnold Busck, 1942).

[6] See also Elizabeth J. Curtis, F. Clarke Fraser, and Dorothy Warburton, "Congenital Cleft Lip and Palate: Risk Figures for Counseling," *American Journal of Diseases of Children* (1961), *102*:853–857.

[7] Charles M. Woolf, Robert M. Woolf, and T. Ray Broaubent, "Cleft Lip and Heredity," *Plastic and Reconstructive Surgery* (1964), *34*:11–14.

[8] Charles M. Woolf, "Paternal Age Effect for Cleft Lip and Palate," *American Journal of Human Genetics* (1963), *15*:389–393.

[9] See D. C. Spriestersbach, Bette R. Spriestersbach, and Kenneth L. Moll, "Incidence of Clefts of the Lip and Palate in Families with Children with Clefts and Families with Children without Clefts," *Plastic and Reconstructive Surgery* (1962), *29*:392–401.

genital anomalies such as cleft palate. It has been shown, for example, that certain deficiencies of vitamins or minerals in the diet of the pregnant mother may result in abnormal offspring. Certain other adverse influences affecting the pregnant mother have been given wide publicity in recent years—radiation (X ray, radioactive substances) and infectious disease, especially German measles. Reduced atmospheric pressure can also cause deficiencies in the offspring. Mechanical factors such as pressure on the growing embryo or intrusion of the tongue may cause deformities. Most of these observations have been made on lower animals and hence cannot be taken to be adequate explanations of human malformations. They suggest, however, that similar factors may cause anomalies in human infants.[10] It is possible to produce cleft palate in mice by injecting cortisone into the pregnant mothers at a time after the embryonic palate normally would be closed.[11] This suggests that in some cases cleft palate may be the result of a degenerative change occurring in the embryo rather than a disturbance of development.

A cleft palate has many important effects on a child from the moment of birth. There is the problem of feeding the infant. If the cleft is small, and especially if the lip is not involved, the baby may be able to nurse fairly efficiently and easily. If the cleft is larger, however, it prevents the baby's building up enough suction to nurse well. This can be overcome by enlarging the hole in the nipple or by means of a plastic obturator fitted to the nursing bottle—a sheet of plastic shaped like a flattened dome which fits into the defect in the palate and closes it well enough to permit nursing. While it is always possible to maintain good

10 A most comprehensive survey of this subject is *Second International Conference on Congenital Malformations*, papers and discussions (New York: International Medical Congress, 1964). Papers and discussions from the First International Conference on Congenital Malformations and from the First Inter-American Conference on Congenital Defects were published in Philadelphia by J. B. Lippincott Company in 1961 and 1963, respectively. See also A. P. Norman, ed., *Congenital Abnormalities in Infancy* (Oxford: Blackwell, 1963). An excellent earlier discussion is Josef Warkany, "Etiology of Congenital Malformations," in *Advances in Pediatrics* (New York: Interscience Publishers, 1947), Vol. II, pp. 1–63.

11 F. Clarke Fraser, T. D. Fainstat, and H. Kalter, "The Experimental Production of Congenital Defects with Particular Reference to Cleft Palate," *Etude Neo-natales* (1953), *2*:43–58. A preliminary report was published in *Pediatrics* (1951), *8*:527–533, under the title, "Production of Congenital Defects in the Offspring of Pregnant Mice Treated with Cortisone."

nutrition in a baby with a cleft palate, this may require careful attention.

Cleft palate babies seem to be more susceptible to colds than other children. When an infection starts in any part of the nose or throat, it can spread farther and faster when a palate that is widely cleft permits open communication between nose and mouth. One of the worst places for such an infection to reach is the ear, and in cleft palate children it frequently lodges there, traveling into the middle ear cavity by means of the Eustachian tube, which connects the middle ear with the upper part of the pharynx. Normally the pharyngeal end of the Eustachian tube is closed by the light contact of folds of mucous membrane; each time swallowing occurs, the pull of the muscles of the upper pharynx opens the entrance to the Eustachian tube, thus permitting air to enter. This process equalizes the air pressure on the inner and outer surfaces of the eardrum, and it also aids in maintaining the tissues of the middle ear in a healthy condition. A cleft of the soft palate disrupts the normal muscle functioning of the upper pharynx and often means that the Eustachian tube is not properly ventilated. Hence the eardrum may be thrust inward by pressure of the outside air, creating an interference with proper functioning of the middle ear. The tissues also are rendered more vulnerable to infection. Repeated infections of the middle ear are the commonest cause of acquired hearing losses in children; cleft palate children as a group are much more likely than others to have hearing losses.[12] Antibiotic drugs have reduced the number of hearing losses caused by ear infections, but the problem has by no means been conquered.

There are psychological problems arising from clefts of the lip and palate. If the child was born with a cleft lip, the repair may have left a visible scar. The lip may be short and somewhat stiff, so that the facial expression may be affected. Modern improve-

12 Many studies over many years agree on this point but differ widely as to the frequency of hearing loss in relation to cleft palate. At least part of this variation can be explained by lack of uniform definition of the term "hearing loss," as shown by D. C. Spriestersbach, Dean M. Lierle, Moll, and William F. Prather, "Hearing Loss in Children with Cleft Palates," *Plastic and Reconstructive Surgery* (1962), *30*:336–347. See also Malcolm D. Graham, "A Longitudinal Study of Ear Disease and Hearing Loss in Patients with Cleft Lips and Palates," *Annals of Otology, Rhinology, and Laryngology* (1964), *73*:34–47.

ments in plastic surgery tend to result in a far better appearance than was generally achieved with older methods. Even so, many children with cleft palate, especially if the lip is also involved, are self-conscious about their appearance. They are even more self-conscious about their speech impairments and are often shy and tend to avoid talking.

The cleft of the lip or palate thus becomes the focus of a problem involving many members- not only the child, but also his parents and his teachers, his relatives, and playmates—as they react to his reactions to his cleft. And as they join him as members of the problem, he reacts not only to his cleft, and his appearance, and his speech, but also to their reactions to his reactions and to their reaction to him as a person with a cleft. As reactions spiral, his self-consciousness and shyness grow. Yet there is something heartening in the fact that the problem has these members, for just as each member has contributed to the making of the problem so each can contribute to its resolution.

Cleft palate speech In an untreated cleft palate patient, and in many treated cases as well, the voice quality is nasal. The nasality, however, is not the penetrating nasal "twang" of the hillbilly singer. Actually the voice has little penetrating quality and does not carry well, but there is a good deal of nasality associated with almost every word. In many cases this nasality is associated with what might be called in nontechnical language "snorting" in the production of stop-plosive sounds such as *p* and *t*.

The cleft palate speaker is difficult to understand especially because of his numerous faults in articulation. Various studies have been undertaken in an effort to define these articulatory disorders. In one of these studies, 25 cleft palate children between the ages of 3 and 8 were given a 176-item articulation test. It was found that the group was generally retarded in the development of articulatory skills as compared with norms established by Templin. Vowels and diphthongs occasioned little difficulty. The consonant giving the least difficulty was *m*, followed in order by *n*, *h*, *y*, and *ng*. The consonants most often misarticulated were, in order of decreasing difficulty, *z*, voiceless *th*, *s*, *ch*, *j*, voiced *th*, *sh*, and *t*, all of which were incorrectly made more than 60 per-

cent of the time. The subjects had significantly less difficulty with voiced than with voiceless consonants. Fricatives caused the greatest difficulty. Consonants appearing as elements of blends were misarticulated oftener than when they appeared singly. There was a good deal of inconsistency in the articulatory errors the cleft palate children made.[13]

The combination of nasal voice quality and distorted articulation produces a characteristic speech pattern that is nearly always instantly recognized though it is far more marked in some cases than others and may not be heard at all in successfully treated cases. In addition it has been shown that, as a group, children with clefts are significantly retarded in communication skills in addition to voice quality and articulation ability. They are deficient in several areas including vocabulary, length and complexity of verbal responses, and amount of spontaneous speech.[14]

Treatment of Cleft Palate Enough has been said about the anatomical deviations of cleft lip and palate and about the effects of such deviations on speech to indicate that children with clefts present difficult problems which are made even more difficult by the great differences found from one child to another. For example, as mentioned earlier, the cleft may involve only the soft palate or both hard and soft palate; it may extend through the gum ridge or even through the lip; its width may vary widely. There may be several different associated abnormalities of the nose. The teeth, when they appear, may be abnormally placed. The number of possible combinations of these factors is great. And, as stated before, there also may be related problems involving hearing, nutrition, level of intelligence, and congenital abnormalities in addition to the cleft, as well as certain less tangible factors, such as morale and family environment. The great complexity of the cleft palate problem makes it impossible

[13] Spriestersbach, Frederic L. Darley, and Verna Rouse, "Articulation of a Group of Children with Cleft Lips and Palates," *Journal of Speech and Hearing Disorders* (1956), *21*:436–445. See also Spriestersbach, Moll, and Hughlett L. Morris, "Subject Classification and Articulation of Speakers with Cleft Palates," *Journal of Speech and Hearing Research* (1961), *4*:362–372.

[14] Morris, "Communication Skills of Children with Cleft Lips and Palates," *Journal of Speech and Hearing Research* (1962), *5*:79–90.

for any one person to deal with all its aspects and make all the decisions that must be made about any given child. This is a problem that requires a group of specialists working together. They come from the areas of pediatrics, speech pathology, plastic surgery, orthodontics, dental prosthetics, clinical psychology, social work, otology, audiology, and often others. The nationwide acceptance of the "team approach" to the cleft palate problem has resulted in great benefits to the children involved.

Now it must be made clear that the crux of the problem is speech, considered in the broad sense of the communicative behavior of social interaction, and including the individual's reactions to his own speech and to himself as a speaker. It is true that there are other results of the cleft besides the mutilated speech and the behavior and feelings associated with it, but these are minor by comparison and are to be looked on as conditions complicating the speech behavior problem. For example, the increased susceptibility of the cleft palate child to colds has been mentioned, but this is never sufficient reason for subjecting the child and his family to the trouble and expense of treatment directed at the cleft. *The only valid basis for considering surgical or any other treatment is the predicted effect on the child's speech.* The goal is to render the child's speech structures as normal and adequate as possible, anatomically and functionally. There are two chief methods of doing this.

SURGICAL REPAIR. If there is a cleft lip, it is usually best that it be repaired early unless there is some good medical reason for delaying the operation. The preferred time of operation varies from one surgeon to another. Early repair restores the normal lip pressure, and this in turn helps in closure of a cleft in the gum ridge. It may also reduce the width of a cleft in the hard palate.[15] There is no disagreement as to the necessity and desirability of early surgical repair of a cleft lip, whether or not it is associated with cleft palate.[16] Since a repaired cleft lip rarely

[15] Samuel Pruzansky, "The Role of the Orthodontist in a Cleft Palate Team," *Plastic and Reconstructive Surgery* (1954), *14*:10–29.

[16] In a recent survey it was found that 7 percent of surgeons prefer to repair a cleft lip before the child is 2 weeks old; 49 percent operate between 2 and 6 weeks; 43 percent between 6 weeks and 6 months. See Michael L. Lewin, "Management of Cleft Lip and Palate in the United States and Canada," *Plastic and Reconstructive Surgery* (1964), *33*:383–394.

has any effects on speech, the rest of this discussion will be confined to clefts of the palate.

The purpose of surgical repair of the cleft palate is not merely the filling of the hole. Satisfactory closure of the opening in the hard palate is surely of considerable importance, but of even greater importance is the desired functional result—a palate functionally similar to a normal palate. Whether this aim can be accomplished depends on many factors—the size and shape of the cleft, the thickness of the tissue available, and many other technical details. Every case presents special problems.

In recent years steady advances have been made in the surgery of cleft palate, and results are generally better than those of 20 or more years ago.[17] One of the marked advances is in the reduction of the number of operations planned for a given child. It used to be not uncommon to carry out several separate operations on the cleft palate. The results of such surgery, however, were almost invariably bad. Many advances in surgery have made it possible to do only one operation on most patients, though some may need to have a second. An evidence of the continuing change and development in surgical treatment is found in the fact that over half of the plastic surgeons in the United States and Canada changed their method of operation on cleft palate in the decade 1953–1963; over two-thirds changed their technique of dealing with cleft lip.[18]

It used to be believed that if surgery were carried out before the child had begun to talk, speech would develop normally and no speech correction would be needed. Accordingly, many surgeons performed the closure of the palate at 6 to 9 months of age. The speech results of this early closure were generally disappointing, and it was also found that early operation resulted in a narrowing of the upper jaw and interference with facial growth.[19]

17 Those interested in the technicalities of cleft palate surgery are referred to Richard C. Webster, "Cleft Palate," *Oral Surgery, Oral Medicine, and Oral Pathology* (1948), *1*:647–669 and *1*:943–980, and (1949), *2*:99–153 and *2*:485–542, for an exhaustive historical account of the subject. A recent surgical treatise is W. G. Holdsworth, *Cleft Lip and Palate*, 3rd ed. (New York: Grune and Stratton, 1963). See also A. B. LeMesurier, *Hare-Lips and Their Treatment* (Baltimore: Williams and Wilkins, 1962).

18 Lewin, *op. cit.*

19 Benjamin F. Edwards, "Evaluation of Cleft Palate Surgery," *American Journal of Surgery* (1953), *85*:638–641.

Hence, there developed a trend toward deferring the closure till the child was 4 or 5 years old, since approximately five-sixths of the lateral growth of the upper jaw is accomplished by the end of the fourth year.[20] Many surgeons now feel that they have developed techniques which permit early operation without interference with facial growth. As of 1964, 81 percent of plastic surgeons prefer to operate on a cleft palate when the child is between 1 and 2 years of age.[21] As to the claims that early operation permits speech to develop normally without need for special speech is different or is he willing to talk as much as the others? assertions are made by surgeons who are not specialists in speech pathology and are made on the basis of inadequate examination of the child after operation. It is true, however, that in some studies by speech pathologists children have been followed for several years after operation; in some instances speech has been found to develop normally, although this is far from being the rule at present.[22]

PROSTHETIC APPLIANCES. The other method of closing the aperture in the palate involves the use of an artificial palate. Such a device is known as an obturator (or speech appliance) and is constructed by a dentist. One who specializes in this branch of dentistry is called a "prosthodontist." (The term "prosthesis" refers to an artificial substitute made to take the place of a missing part.)

The obturator must be carefully constructed, and it is a painstaking job to design and fit one. It must be made in such a way that it can easily be removed when desired, and yet it must fit firmly when it is in place. It is not possible, of course, to close off the nose from the mouth completely with an obturator, for if this were done the patient could not breathe through his nose. A sizable opening must be left between the back part of the obturator and the wall of the throat. During speech this opening is partly or completely closed by action of the muscles of the

20 T. M. Graber, "Craniofacial Morphology in Cleft Palate and Cleft Lip Deformities," *Surgery, Gynecology and Obstetrics* (1949), *88*:359–369. See also, by the same author, "Changing Philosophies in Cleft Palate Management," *Journal of Pediatrics* (1950), *37*:400–415.

21 Lewin, *op. cit.*

22 Muriel E. Morley, *Cleft Palate and Speech*, 5th ed. (Baltimore: Williams and Wilkins, 1962).

upper part of the throat so that the voice is not nasal, or is minimally nasal.[23]

Since there are two methods of closure of the palate available, a choice must be made. It is unfortunate if this choice is made without taking both possibilities into account, and without careful consideration of the problems of the particular child by a group of experts in consultation. Too often it has been routinely assumed that surgical closure would be the only satisfactory method; prosthetic closure has been reserved for cases in which surgery had failed. The task of the prosthodontist, however, is made more difficult by previous surgical failure.

The ideal of careful study of each cleft palate child by a group of experts—a "cleft palate team"—is not always realized, but this multilateral approach to the cleft palate problem has spread so rapidly in the United States that it will soon be possible for nearly all cleft palate children to benefit from it.[24]

Speech therapy The general principles underlying remedial training for children with other types of voice and articulation problems apply equally to speech correction for children with cleft palate speech. The speech is carefully analyzed to determine as precisely as possible just what faults are present. The child is carefully examined, during speech and at rest, to discover what abnormalities, if any, of structure or function may be causally related to each of the speech imperfections noted. Then, in terms of all these facts, the developmental and remedial speech program is planned.

What the classroom teacher can do

IF THERE IS A SPEECH CLINICIAN. In cooperating with a speech clinician who is working with the cleft palate child, the class-

[23] The following references will prove useful as a starting point for those who wish to investigate the matter of cleft palate prosthesis: Cloyd S. Harkins and Herbert Koepp-Baker, "Twenty-five Years of Cleft Palate Prosthesis," *Journal of Speech and Hearing Disorders* (1948), *13*:23–30; James H. Platt, "The History and Principles of Obturator Design," *Journal of Speech Disorders* (1947), *12*:111–123; Spriestersbach, "Criteria for Establishing the Need for a Speech Appliance," *Journal of Speech and Hearing Disorders* (1956), *21*:365–370; Mohammed Mazaheri, "Indications and Contraindications for Prosthetic Speech Appliances in Cleft Palate," *Plastic and Reconstructive Surgery* (1962), *30*:663–669.

[24] For a listing of cleft palate teams by states, see the latest *Directory* of the American Cleft Palate Association at nearest major library (see Appendix IV).

room teacher can provide a great deal of helpful information about the child's speech in his daily classes. How much is the child talking in school? Does he tend to keep still because his speech is different or is he willing to talk as much as the others? How does he react when others have trouble understanding him? What sorts of relations does he have with other children? In short, who are members of this problem? These and other facts supplied by the classroom teacher will be of great help to the speech specialist.

Whether or not there is a remedial speech specialist in the school system, the most important things a classroom teacher can do for the child with a cleft palate are to help him meet some of the psychological problems connected with his condition and to create in the classroom the kind of atmosphere that will minimize these problems. This point has already been made in Chapter Two, and it has been repeated several times since with regard to other speech problems. It needs to be said again with regard to children with cleft palates. No teacher is likely to have many cleft palate pupils, even during a lifetime of teaching. The few she may encounter, however, often have great needs that only a sensitive and understanding teacher can meet.

Some few cleft palate children are matter-of-fact about their problem. More often, however, such a child is embarrassed about his cleft, his obturator, or his operation, and is fearful of ridicule. A perceptive and skillful teacher can help him to overcome his embarrassment and fear. She can do much to develop in the child's classmates friendly and understanding feelings towards him rather than feelings that result in rejection and taunts. In order to do this, the teacher may need to explain to the other children why the cleft palate child talks as he does. A little frank discussion will usually prevent or remedy difficulties with the other children.

IF THERE IS NO SPEECH CLINICIAN. When no specialized help is available in the school system, there is much the classroom teacher can do by herself. First, of course, she will want to discuss the child's problems with his parents. If he has had no treatment of any sort, the parents should be encouraged to take the child to a cleft palate center such as has previously been described. Information or facilities available in various parts of the country may be had from the American Cleft Palate Associ-

ation or the American Speech and Hearing Association.[25] Every state has a Crippled Children's Service, supported jointly by the state and federal governments, that can be located through the state department of health. Cleft palate falls within the definition of childhood crippling conditions cared for by these Crippled Children's Services, which in all states provide surgical treatment; most also provide prosthetic, orthodontic, and speech therapy as well. No cleft palate child from however poor a family in the remotest town need go through life without benefit of skilled treatment if only an interested teacher will tell the right people about him or tell him and his parents about the right people.

If the child has already had surgical or prosthetic treatment of his palatal cleft, he is likely also to have had some attention, and perhaps a great deal, from a speech clinician. For example, in most states a speech clinician in the Crippled Children's Services sees the child before and after surgery and makes suggestions for a program of exercises at home. The classroom teacher can help carry these out with further suggestions at intervals from the speech clinician. Even if the surgical or prosthetic treatment was not carried out under the auspices of the Crippled Children's Services, the aid of their remedial speech specialist is always available. In some way, then, it will usually be possible for the teacher to get expert guidance in any help she tries to give the child.

If such experienced supervision is not available, or if it can be obtained only at such infrequent intervals as to be of little or no help, then the classroom teacher probably should not try to do any intensive work on the child's speech directly. Indirect, supportive help—the right sort of classroom atmosphere and a warm sympathetic understanding of the child's problems—becomes doubly important. Actual remedial speech service for a child with a cleft palate, however, is often difficult for even the trained and experienced speech pathologist. It is not realistic, therefore, to expect anyone without special training to accomplish very much in such a case, and it must always be considered that ineffectual efforts over a long period may be seriously detrimental to the morale of the child and of all the other members of the problem.

[25] American Speech and Hearing Association, 9030 Old Georgetown Road, Washington, D.C. 20014; and see footnote 24.

CEREBRAL PALSY

The term "cerebral palsy" denotes impairment of muscle function as a result of damage to the brain. Such damage can, of course, occur at any time of life, but as the term is usually applied it refers to cases in which the damage occurred before or during birth or shortly thereafter. This definition is given by one of the great authorities on this subject: "A child has cerebral palsy when it has suffered injury to the brain occurring during the period of rapid development from conception to 3 years, which distorts orderly development and leads to abnormal motor control."[26] The result of such early damage is that the child begins his learning of muscular skills—walking, talking, eating—with an organism that is deficient in some way.

Although the child with cerebral palsy may have one or a number of associated conditions, such as a visual problem, hearing problem, and mental retardation, it is the impairment of neuromuscular control that distinguishes the child with cerebral palsy from other groups of handicapped children. The practical consequences of this condition are in many ways far different from the consequences of impairment of control occurring after functional skills have been acquired. Learning with an impaired mechanism is usually far more difficult than relearning after a previously normal mechanism has been damaged.

Children with cerebral palsy may be subgrouped on the basis of the type of neuromuscular control problem they manifest—spasticity, involuntary movements, incoordination, tremors, rigidity. The brain damage producing it can occur in a number of different ways that will be discussed later. Clearly then, cerebral palsy is not a disease. It is not a unitary condition resulting from a single set of circumstances. It is a group of conditions—a number of different end results of various adverse factors which have affected the brain. Though these differences from case to case are important, there are marked similarities: social and educational effects on the child, limitations of physical activity, need

[26] Bronson Crothers, "Clinical Aspects of Cerebral Palsy," *Quarterly Review of Pediatrics* (1951), 6:142–148.

for special kinds of treatment, and so forth. These similarities justify considering cerebral palsied children as one group.[27]

There are several ways of classifying patients with cerebral palsy. The most authoritative classification is that of the American Academy for Cerebral Palsy, which is detailed and classifies patients on several bases. Among these various methods of classifying cerebral palsied patients is that of clinical evaluation, which is the most commonly used. The American Academy for Cerebral Palsy recognizes the following types of cerebral palsy in terms of clinical (neurological) evaluation: spastic, athetotic, ataxic, rigidity, tremor, atonic, mixed.[28]

SPASTIC. First, then, we shall consider the *spastic* group of cases. (The term "spastic" is sometimes incorrectly used to refer to all cerebral palsied children.) Although there is some variation in figures from different studies, it seems clear that this is the largest group, including about 60 percent of the total cerebral palsied population. These children make jerky movements of their extremities when trying to perform any voluntary act such as walking, eating, or writing. Their involved muscles are abnormally tense and any movement involving these muscles may be inaccurate, sudden, jerky, excessive, and unsteady. In some cases only one leg is affected, and the child may have comparatively little handicap. In other instances all four extremities may be spastic; the muscles of the trunk, the neck, the face, and the tongue and throat may be involved. Consequently, such a child may be unable to walk, talk, sit up, feed himself, or perform any other act for himself. In some cases the spasticity is confined to one side of the body with one arm and the corresponding leg being affected. In other cases the legs are spastic, but the arms are normal or nearly so. We need not be concerned here with the technical terms for all these groups of spastics nor with all their diagnostic criteria, but it is important to know that there are

[27] For authoritative medical discussions of cerebral palsy see Crothers and R. S. Paine, *The Natural History of Cerebral Palsy* (Cambridge: Harvard University Press, 1959); Eric Denhoff and Isabel Pick Robinault, *Cerebral Palsy and Related Disorders* (New York: McGraw-Hill, 1960); Sidney Keats, *Cerebral Palsy* (Springfield, Ill.: Thomas, 1965).

[28] W. L. Minear, "A Classification of Cerebral Palsy," *Pediatrics* (1956), *18*:841–852.

great differences among children within the spastic group as to the location of muscular involvement.

Those spastic children who have involvement of muscles of all four extremities, and of neck, tongue, lips, jaw, and palate, of course have speech problems. Among the children with spasticity who have involvement on one side of the body, a relatively large percentage also have speech problems. However, the underlying neurological basis of their speech problems is not as well-understood as in those children in which muscular involvement of the speech mechanism is obvious.[29] Many spastic children who have involvement of only the legs, or involvement of the legs and arms only, do not have speech problems. As reported by Illingworth, the percentage of speech problems in the spastic group is smaller than in some of the other types of cerebral palsy, and this smaller percentage of speech problems among spastic children is probably due to the variety and type of neurological problems found in that group.[30]

ATHETOTIC. The next largest group of cerebral palsied children is the *athetotic* group (also referred to as "athetoid"). This group comprises about 30 percent of the cerebral palsied. These children are characterized by involuntary and uncontrollable or uncontrolled movements. In rare cases these movements may be confined to one side of the body, but in nearly all cases all four extremities are affected; muscles of the head, neck, and trunk are also usually involved. The movements are purposeless and bizarre and often result in the distortion of any posture the child tries to assume. They are usually quite unpredictable, though some children may tend to make chiefly writhing movements, for example, or flail-like movements. These movements are increased whenever the child tries to carry out any voluntary act. They are decreased when he is at rest and are greatly decreased or absent during sleep. Most muscles, including those used in speech, are usually affected and random movements of the tongue or other structures make speech laborious and difficult

[29] Herbert Schliesser, "Restricted Motility of the Speech Articulators and Selected Sensory Discriminative Modalities of Speech Defective Spastic Hemiplegic Children," unpublished Ph.D. dissertation (University of Iowa, 1965).

[30] R. S. Illingworth, *Recent Advances in Cerebral Palsy* (Boston: Little, Brown, 1958), p. 75.

to understand. It is possible to make many subdivisions of the athetoid group, such as flail or rotary types. For present purposes the important thing is not terminological elaboration but recognition of the great differences among athetotic children.

ATAXIC. The third group, the *ataxic,* is smaller than either the spastic or the athetotic, making up approximately 5 percent of all cerebral palsied persons. The chief symptom of the ataxic type of cerebral palsy is lack of coordination and balance. The child has difficulty walking because of his poor equilibrium and faulty coordination—he walks with legs spread far apart. The legs are usually far more involved than are the arms, but the child may have poor coordination for such activities as writing, feeding himself, and related activities. He may have incoordination—ataxia—of the tongue and speech muscles and thus may have impaired speech.

OTHER TYPES. There are several other kinds of cerebral palsy, but taken together they make up only about 5 percent of the total. There is, for example, the atonic or flaccid type of child.[31] The involved muscles are weak, flabby, and undeveloped. As with the spastic child, one, two, three, or four extremities may be affected. The types designated as *tremor* and *rigidity* need little explanation. There may also be *mixed* cases in which spasticity and athetosis, for example, or spasticity and ataxia are present in one case. These mixed cases are uncommon.[32]

Causes of Cerebral Palsy A number of conditions may be listed among the causes of cerebral palsy. The brain may fail to develop properly during embryonic life. It may be deformed, some part may be missing, or the number of nerve cells may be abnormally small. The cause of this faulty development may be an illness of the mother early in her pregnancy. German measles

31 Herman Yannet and Frank Horton, "Hypotonic Cerebral Palsy in Mental Defectives," *Pediatrics* (1952), *9*:204–211.

32 Not all authorities agree, however, and Barnett says that spasticity and athetosis "coexist in approximately 15 to 20 percent of cases." See Harry E. Barnett, "Orthopedic Surgery in Cerebral Palsy," *Journal of the American Medical Association* (1952), *150*:1396–1398. A detailed description of procedures that can be used in evaluating specified reflexes in patients with cerebral palsy is presented in K. Bobath and Berta Bobath, "Tonic Reflexes and Righting Reflexes in the Diagnosis and Assessment of Cerebral Palsy," *Cerebral Palsy Review* (September–October 1955), *16*:4–10.

(rubella) is one of the illnesses of the pregnant mother most likely to produce abnormalities in the baby, and among these abnormalities may be brain aberrations producing cerebral palsy. Hemolytic disease of the newborn (erythroblastosis fetalis) results in many cases of cerebral palsy, chiefly of the athetoid type with hearing loss.[33] Certain other conditions or illnesses in the pregnant mother may result in cerebral palsy.

Conditions occurring at the time of birth are responsible for some cases of cerebral palsy. In fact, the term "birth-injured" is sometimes used to refer to a cerebral palsied child, though it is inexact and often inappropriate. Injury in the sense of trauma—physical damage inflicted on the baby's head—is only one of the factors involved here. There may be cerebral hemorrhage from causes other than trauma. There may be inadequate oxygen supply to the infant's brain (cerebral anoxia) for any of a dozen reasons—for example, too deep anesthesia of the mother during delivery, compression of the umbilical cord during breech delivery, maternal hemorrhage just before delivery, and so forth. Various authors have emphasized the great importance of anoxia, which "plays a dual role in causing both primary encephalomalacia [softening of the brain as a result of injury to the brain tissue] and secondary vascular hemorrhage."[34] In the early years of life, injury, infections, illness, and poisons are the most fre-

[33] Lassman, see footnote 36. Hemolytic disease of the newborn is a condition characterized by jaundice; anemia; enlargement of the liver, spleen, and heart; other symptoms occur occasionally. The disease may be mild or it may be so severe as to cause death before the baby is born or within a few hours after delivery. Among the substances circulating in the blood is a group called the "Rh factor" or "Rh antigen." To oversimplify this complicated matter, one may say that a given person may be Rh positive (85 percent of the U.S. population) or Rh negative (15 percent), depending on an elaborate pattern of inheritance. When Rh positive red blood cells are introduced into the circulation of a person who is Rh negative, antibodies are produced to destroy the red blood cells which are incompatible with the Rh negative blood. If a mother is Rh negative and her husband Rh positive, the offspring may be Rh positive. While the Rh positive fetus is developing, the mother produces antibodies which destroy the fetal red blood cells (hemolysis). This Rh incompatibility is the chief cause of hemolytic disease of the newborn. For a very detailed discussion of this problem and problems of the children affected by it, the reader is referred to Chester A. Swinyard, ed., *Kernicterus in Cerebral Palsy*, The American Academy for Cerebral Palsy (Springfield, Ill.: Thomas, 1961).

[34] Eric Denhoff, Victor N. Smirnoff, and Raymond H. Holden, "Cerebral Palsy," *New England Journal of Medicine* (1951), *245*:728–735 and 770–777. See also *American Journal of Diseases in Children* (1948), *76*:666–688.

quent causes of brain damage resulting in cerebral palsy. This listing of possible causes of cerebral palsy is by no means complete, but it includes most of the important ones. Certain of the causes cited tend to produce predominantly one type of problem. Thus traumatic injury to the brain or hemorrhage tends to result in spasticity. Anoxia tends to produce athetosis.[35]

Effects The definition of cerebral palsy specifies a motor impairment, but injuries to the brain such as have been listed rarely affect only the control of the muscles. Important sensory and perceptual disturbances may also be present. Hearing deficiencies are frequent and seem to occur more often in the athetoid group. Lassman found that more than one-fourth of his athetoid subjects had hearing losses of 20 dB or more at frequencies of 512, 1,024, and 2,048 Hz.[36] Others have found hearing losses in spastic and other types of cerebral palsy.[37] Visual defects may frequently occur. It has been found that 40 to 50 percent of cerebral palsied patients have strabismus (cross-eyedness).[38] Nystagmus and other defects interfering with vision are also often found, especially in athetosis.[39] Dolphin and Cruickshank have found cerebral palsied children to be inferior to normals in their visual and tactual motor perception. In both sensory modalities, the cerebral palsied children had more difficulty than did the normal controls in distinguishing the figure from the background.[40] The results of later investigations of this type, however, indicate that such problems of perception in cerebral

35 Meyer A. Perlstein and Eugene T. McDonald, "Nature, Recognition and Management of Neuromuscular Disabilities in Childhood," round table discussion, *Pediatrics* (1953), *11*:166–173.

36 Frank M. Lassman, "A Clinical Investigation of Some Hearing Deficiencies and Possible Etiological Factors in a Group of Cerebral Palsied Individuals," *Speech Monographs* (1951), *18*:130–131.

37 William G. Hardy, "Testing the Hearing of Cerebral Palsied Children," *Proceedings of the Scientific Sessions of the American Academy for Cerebral Palsy* (Chicago: 1950), pp. 17–23; Martin F. Palmer, "Speech Disorders in Cerebral Palsy," *Nervous Child* (1949), *8*:193–202.

38 George P. Guibor, "Eye Defects Seen in Cerebral Palsy," *Crippled Child* (October 1950), *28*:4–6 (volume number misprinted as 30).

39 Guibor, *op. cit.;* David Glendenning Cogan, *Neurology of the Ocular Muscles* (Springfield, Ill.: Thomas, 1947), pp. 69–73; James Hamilton Doggart, *Disease of Children's Eyes* (St. Louis: Mosby, 1947), pp. 82–85 and 189–192.

40 Jane E. Dolphin and William M. Cruickshank, "The Figure-Background Relationship in Children with Cerebral Palsy," *Journal of Clinical Psychology* (1951), 7:228–231; "Tactual Motor Perception of Children with Cerebral Palsy," *Journal of Personality* (1952), *20*:466–471.

palsied children are much more complex than might have been assumed from earlier research.[41] It may be that the cerebral palsied child's problems of perception may be related more directly to difficulties in organizing specific stimuli (e.g., a picture of an object) into a whole concept rather than a problem in merely perceiving such a stimuli.[42]

The injury to the brain which results in cerebral palsy may have yet other effects in addition to motor and sensory impairments. Behavior may be noticeably affected. Anoxia, which has been mentioned as a frequent cause of cerebral palsy, has often been found to produce a characteristic behavior pattern consisting of unpredictable variability in mood, hypermotility, impulsiveness, short attention span, fluctuant ability to recall previously learned material, and marked difficulty with arithmetic.[43] Some cerebral palsied children may present such an organically determined behavior pattern. Convulsive disorders are frequent in cerebral palsied children—in 35 percent according to Allen and Jefferson.[44] In addition, the existence of motor and sensory handicaps may arouse in the child feelings of fear and guilt which may render him less able to function happily and effectively in society.[45]

In the decades immediately following the first description of cerebral palsy (by Little in 1862), it was too often assumed that all children with this condition were severely retarded mentally, and there were few efforts to provide special treatment and training for them. We now know how tragically wrong such a generalization is, but we also know that many cerebral palsied children have such severe damage to intellectual functions as to be incapable of profiting from any sort of schooling.

The sensory, perceptual, and behavior difficulties already men-

41 Cruickshank, Harry V. Bice, and Norma E. Wallen, *Perception and Cerebral Palsy* (Syracuse: Syracuse University Press, 1957).

42 For an excellent review of the perceptual problems of children with damage of the brain, as well as more current points of view regarding behavioral disturbances and psychological manifestations of such damage, the reader is referred to Herbert G. Birch, ed., *Brain Damage in Children, the Biological and Social Aspects* (Baltimore: Williams and Wilkins, 1964).

43 George B. Rosenfeld and Charles Bradley, "Childhood Behavior Sequelae of Asphyxia in Infancy," *Pediatrics* (1948), 2:74–84.

44 Robert M. Allen and Thomas W. Jefferson, *Psychological Evaluation of the Cerebral Palsied Person* (Springfield, Ill.: Thomas, 1962).

45 Cruickshank, "The Relation of Physical Disability to Fear and Guilt Feelings," *Child Development* (1951), 22:291–298.

tioned, added to the motor and speech difficulties of the cerebral palsied child, make the estimation of intelligence extraordinarily difficult. Standardized intelligence tests may unduly penalize the cerebral palsied child and, on the other hand, there are dangers in administering tests in a nonstandard way or in making special allowances.[46] Holden has contributed a review of 43 different studies of this general subject, concluding, in part, that several investigations "have indicated an incidence of mental deficiency of from 45 to 50 percent in cerebral palsied children, even when flexible test procedures were utilized."[47] Differences in application of testing standards account for some of the variability in the results of these studies, and sampling errors also may have influenced the results. But whatever figure is most nearly correct for any given group of cerebral palsied children, there can be no disagreement on the fact that the amount of mental retardation is great.

The high proportion of mental deficiency among cerebral palsied children must not, however, make us lose sight of the fact that many cerebral palsied persons are unusually gifted. There have been many successful scholars, physicians, mathematicians, writers, and others who have succeeded despite the handicap of cerebral palsy. An annual feature of the conventions of the National Society for Crippled Children and Adults is a panel of distinguished handicapped persons, which regularly includes one or more cerebral palsied individuals who have achieved outstanding success in one field or another. An accurate appraisal of the cerebral palsied group must include these brilliant intellects as well as those who are average or retarded.[48]

[46] Many authorities have discussed the special problems involved in the intelligence testing of cerebral palsied children. See, for example, Charles R. Strother, "Evaluating Intelligence of Children Handicapped by Cerebral Palsy," *Crippled Child* (1945), *23*:82–83; Else Haeussermann, "Evaluating the Developmental Level of Cerebral Palsy Preschool Children," *Journal of Genetic Psychology* (1952), *80*:3–23; Allen and Jefferson, *op. cit.*; and Edith Meyer Taylor, *Psychological Appraisal of Children with Cerebral Defects* (Cambridge: Harvard University Press, 1959).

[47] Holden, "A Review of Psychological Studies in Cerebral Palsy: 1947 to 1952," *American Journal of Mental Deficiency* (1952), *57*:92–99.

[48] Some of the more gifted cerebral palsied persons have written autobiographical accounts of great interest. See, for example, Earl R. Carlson, *Born That Way* (New York: Day, 1941); Earl Schenck Miers, "Gosh, I'm Glad I'm Handicapped," *Crippled Child* (December 1953), *31*:4–7; John D. McKee, *Two Legs to Stand On* (New York: Appleton-Century-Crofts, 1955).

Many teachers have taught for years without ever having had a child with cerebral palsy in their classrooms. Yet the condition is far from being as uncommon as one might judge from the number of such children in the public schools. On the basis of the available figures on the incidence of cerebral palsy, the total number of such cases in the country usually has been estimated at 250,000 to 300,000, but some estimates run as high as 600,000.[49]

The speech of the cerebral palsied Not every child with cerebral palsy has a speech problem, as has been mentioned, for the muscles involved in speech may be spared or only minimally affected. Wolfe found that 70 percent of his cases needed speech therapy. The other 30 percent had "substantially normal" speech.[50]

It would be reasonable to expect that children with cerebral palsy would be somewhat slower than others in the development of speech. In discussing retarded speech development, we have already mentioned motor difficulties as one of the causes of speech retardation (Chapter Six).

In addition to neuromuscular problems, the child with cerebral palsy may have visual, hearing, perceptual, intellectual, and behavioral difficulties interfering with normal speech development.

Furthermore, the cerebral palsied child, because of his physical problems and other difficulties, may be deprived of many experiences in his environment that are beneficial to all types of learning. In this regard, Mecham, Berko, and Berko present a good discussion of the effects of such deprivation and their implications, in particular, for the classroom teacher.[51]

Consequently, it is not at all surprising that as many as 70 percent of all cerebral palsied children have speech problems. Indeed, it would be surprising if they did not.

Byrne has studied the articulation errors of a group of spastic and athetoid children. In general, her results indicated that cerebral palsied children have relatively more difficulty in producing those speech sounds that are more complex physiologi-

[49] Allen and Jefferson, *op. cit.*

[50] William G. Wolfe, "A Comprehensive Evaluation of Fifty Cases of Cerebral Palsy," *Journal of Speech and Hearing Disorders* (1950), *15*:234–251.

[51] Merlin J. Mecham, Martin J. Berko, and Francis Giden Berko, *Speech Therapy in Cerebral Palsy* (Springfield, Ill.: Thomas, 1960).

cally. For example, the *ch, sh, s, z,* and *th* sounds ranked among the most frequently misarticulated sounds, while the *b, m, d,* and *n* sounds were less frequently misarticulated. It is interesting to note that, as Byrne points out, the sounds misarticulated least often in the cerebral palsied child are those that the young normal child learns first, thus pointing up the developmental delay in the articulation skills of these children.[52]

The faulty articulation patterns of the cerebral palsied child may be so severe as to render the speech unintelligible. The articulation problem may be due to problems of control and mobility of the tongue, lips, and jaw,[53] or, in numerous cases, poor function of the palate.[54] In the latter case, the child would have the same problem producing correct articulation as would a child with a cleft palate. It should be kept in mind, however, that such a child will usually have poor control of the other articulators in combination with a poorly functioning palate, thus making good articulation even more difficult than if he had only a palatal problem.

Of course, articulation errors may be the result of a child with cerebral palsy having a hearing loss as described in Chapter Eight. This is particularly so in the rather numerous athetoid children who have poor hearing for high frequencies.

It is also important to note that some components of a cerebral palsied child's articulation problem may be due to faulty learning. That is, in combination with other possible bases, the cerebral palsied child may have some articulation errors that resemble those described in Chapter Three.

The voice of the cerebral palsied child may be affected in several ways. It may often be of poor quality, with breathiness, harshness, and nasality being the undesirable qualities most often encountered. It may be weak in intensity. There is often poor control of the use of pitch inflections and intensity shadings, so that the voice impresses the listener as monotonous. These voice characteristics are not found in all cerebral palsied children

52 Margaret C. Byrne, "Speech and Language Development of Athetoid and Spastic Children," *Journal of Speech and Hearing Disorders* (1959), *24*:231–240.

53 Thomas J. Hixon and James C. Hardy, "Restricted Motility of the Speech Articulators in Cerebral Palsy," *Journal of Speech and Hearing Disorders* (1964), *29*:293–306.

54 Hardy, "Intraoral Breath Pressure in Cerebral Palsy," *Journal of Speech and Hearing Disorders* (1961), *26*:309–319.

nor is there a pattern characteristic of the athetoid group as opposed to the spastic.[55]

There are still other effects of cerebral palsy on speech. The rate is usually slow, the rhythm jerky, and the speech labored and effortful.[56] The combination of faulty articulation, monotonous and breathy voice, slow rate, and labored and jerky enunciation is sometimes referred to as "cerebral palsy speech," but Rutherford found no speech pattern that could be called characteristic of cerebral palsied children as a group.[57]

Practically all authors who discuss the speech problems of these children point out that in many cases they have problems in controlling their respiratory muscles. Such problems undoubtedly contribute to their very complex speech disorders, although the exact manner in which their respiratory systems fail to provide an adequate air stream upon which their vocal folds and articulators act for speech production is unclear at this time.

McDonald and Chance present a relatively brief but comprehensive discussion of the complex factors which may underlie the speech problems of the cerebral palsied child.[58]

Treatment of cerebral palsy Arnold Gesell once said that "Among all handicaps, cerebral palsy is perhaps the most complex in its origins and in the diversity of its manifestations."[59] To deal in the most comprehensive and competent way with the multiple handicaps and problems of the cerebral palsied child requires a group of experts. In the section on cleft palate, mention was made of the great value of the team approach. It would seem to be even more important for cerebral palsy because of the changing character of the child's problems at different periods of his life.[60]

[55] Berneice R. Rutherford, "A Comparative Study of Loudness, Pitch, Rate, Rhythm and Quality of the Speech of Children Handicapped by Cerebral Palsy," *Journal of Speech Disorders* (1944), 9:263–271.

[56] *Ibid.* See also Wolfe, *op. cit.*

[57] Any misarticulation, deviant voice quality, abnormal rate, effortful or unrhythmic enunciation—singly or in any combination—which is the result of neurological defect is technically termed "dysarthria."

[58] Eugene T. McDonald and Burton Chance, Jr., *Cerebral Palsy* (Englewood Cliffs, N.J.: Prentice-Hall, 1964).

[59] Arnold Gesell, "Cerebral Palsy Research and the Preschool Years," *Postgraduate Medicine* (1954), 15:104–108.

[60] See Crothers and Paine, *op. cit.*; Raymond R. Rembolt, "The 'Team' in Cerebral Palsy," in Darley, ed., *Symposium on Cerebral Palsy* (Washington, D.C.: American Speech and Hearing Association, 1962), pp. 49–54.

The members of a cerebral palsy team—or the staff of a cerebral palsy clinic—would include specialists in the fields of pediatrics, neurology, orthopedics, speech pathology, audiology, child psychiatry, clinical psychology, ophthalmology, and social work. Other experts often may be called on for help. If no such comprehensive facilities are readily available, one can seek help from the state Crippled Children's Service, or obtain information as to possible facilities from the National Society for Crippled Children and Adults or the United Cerebral Palsy Associations.[61]

In the event that no diagnostic facility is available one person must assume the primary responsibility for the child's over-all care. Indeed, this is always necessary unless the continuing services of a cerebral palsy clinic are available to the child and his family over a period of years. The child's pediatrician or the family doctor is probably the best choice for this supervisory role. He must make referrals to whatever other specialists are needed, receive their reports, see that their recommendations are carried out, and maintain continuing supervision of the child, along with advice for his parents. As the school years are reached, new problems arise calling for new consultations and new decisions. Nursery school, special class, regular class, institutional care—which of these and other possibilities is best for this child from this family at this particular time? Probably the question should never be phrased in this way. Rather, out of the theoretically possible choices, which are feasible and what are the reasons for choosing one over another?

In trying to help the cerebral palsied child realize to the full all the capacities he has, practically no reliance can be placed on drugs.[62] Surgery sometimes has a limited value in correcting deformities and improving the mechanical action of muscles and joints in a relatively small proportion of patients. Physical and occupational therapy are often required over periods of years. For those children and adults who need it and are able to profit from it, speech therapy is at least as important as any other type of help, and for some it may well be the most vital of all. The

[61] Addresses: 2023 West Ogden Avenue, Chicago 60612; and 321 West 44th Street, New York 10036, respectively. See also Appendix IV.

[62] Eric Denhoff and Holden, "Relaxant Drugs in Cerebral Palsy: 1949–1960," *New England Journal of Medicine* (1961), *264*:475–480.

complex speech problems in the cerebral palsied require the skills of experienced clinicians. A description of some of the specialized techniques used may be found in many books and articles.[63]

What the classroom teacher can do The more severely handicapped children with cerebral palsy are not usually found in regular public school classrooms. Those whose handicap is less severe, however, and who are able to attend regular classes, still have an appreciable handicap and need special attention, usually including speech therapy.

If there is a remedial speech specialist working in the school, the classroom teacher can give the kind of help already mentioned in the section on cleft palate—information about how much and how well the child is talking in the classroom, about how he gets along with his classmates, and so forth.

If there is no speech specialist, the classroom teacher may assist in getting aid from outside the school system, often from one of the agencies mentioned above. No attempt should be made to deal directly with the child's speech without expert supervision.

In any case, the classroom teacher should bear in mind two important points. First, the child with cerebral palsy often needs special consideration. That is, seating arrangement, classroom duties, and other such matters should be geared to his condition. This is not to say that tasks should be made easy for the child. Many cerebral palsied children can make great gains in function if they work to their maximum potential. The child should be permitted to do what he can without undue fatigue—he will rarely need to be encouraged to do so—but a certain amount of watchfulness and care is necessary. Second, relaxation is one of the child's main problems. At least some of his muscles are nearly always relatively tense. He will be helped if the classroom routine can be arranged in such a way as to provide him with frequent

[63] See among others, Harold Westlake and David Rutherford, *Speech Therapy for the Cerebral Palsied* (Chicago: National Society for Crippled Children and Adults, 1961); Edward D. Mysak, "Significance of Neurophysiological Orientation to Cerebral Palsy Habilitation," *Journal of Speech and Hearing Disorders* (1959), *24*:221–230; Shirley E. Hoberman and Morton Hoberman, "Speech Habilitation in Cerebral Palsy," *Journal of Speech and Hearing Disorders* (1960), *25*:111–123.

opportunities to relax. If need be, a special seat should be provided to help him be more comfortable and relaxed in the classroom.

In some instances cerebral palsied children who have been making a fairly good adjustment develop severe problems in adolescence. With their multiple handicaps in locomotion, speech, and other areas we have mentioned, they find difficulty in developing satisfactory relationships with the opposite sex. While others are going to dances, for instance, they must stay at home because they cannot coordinate well enough to learn to dance. It is not surprising that cerebral palsied adolescents are often depressed, discouraged, resentful, and rebellious to a greater degree than most other persons in this usually stormy period of life.

Understanding the physically handicapped In considering the speech problems of children with cleft palate or cerebral palsy, we have suggested ways in which the classroom teacher can be of help. None of the things already mentioned is nearly so vital as intelligent and sympathetic understanding of the child and his problems. Circumstances may prevent the teacher's carrying out suggestions about the child's speech. She is likely, however, to achieve considerable understanding of the child and the difficulties he has to cope with. If she is able to do this to any significant degree, she will perforce do a great deal to help the child.

It may seem unnecessary to mention a fact so obvious as the importance of the teacher's understanding of the child. Yet in dealing with anyone physically handicapped, many people concentrate on the difference—the physical impairment—so much that they seem unable to get beyond it. They act as if the physical differences explained and defined the whole individual. They think of the child as a cleft palate girl or a cerebral palsied boy —or in other instances, as a clubfooted, blind, deaf, or one-armed child. Of course all of us fall into this error to some extent. If a physical difference is striking, one can scarcely fail to notice and remember it. Physical handicaps are only one of the many stereotypes we use in thinking about others. Our reactions may often be conditioned by a single aspect of another's behavior or appearance. We have other stereotypes relating to race,

religion, vocation, and so forth. Small wonder that we often react to physically handicapped persons in terms of misleading and inaccurate stereotypes.

But having seen the obvious, having noted the physical handicap, the wise and understanding person doesn't stop there; he does more than select the appropriate cliché; he doesn't concentrate on the crippling condition and ignore the rest of the person. He seeks to discover what sort of person it is who is physically handicapped. And as he becomes better acquainted with the person, he assigns the physical condition to its proper place —he neither forgets nor concentrates on the handicap.

Anyone who is thrown into close association with a physically handicapped person will eventually learn more about him than the nature and degree of his disability. How much one learns, the sort of things one learns, and the time required to learn them are good measures of one's sympathy and understanding. Even in a brief meeting, however, something more than the handicap should be impressed on one's memory. Some of us are quick to appreciate the personal qualities of others, some are much slower, and some never manage to understand others well at all.

Many people regard the problems of a physically handicapped person as being "organic" or "physical," forgetting that the way a person feels about his physical difference is at least as important as the difference itself. Also important is what the physically handicapped person thinks others are thinking about his difference. Dealing effectively with *the problem,* as distinguished from the cleft palate or the cerebral palsy, as such, always requires appropriate work with the important members of the problem other than the child and with the physical aspects of the environment. Many children with cleft palates, for example, make slow progress because they talk very little—because they feel that others do not like the way they talk. Only pertinent investigation of the attitudes and reactions of parents, teachers, and associates can determine whether the child is right in his assumption. The point is, however, that whether or not the child is correct in his appraisal of the feelings of others toward him, his embarrassment can effectively block improvement. Cerebral palsied children are highly responsive to the way others act toward them. They tend to be excitable, distractible, and self-conscious.

It is a serious error to pay attention only to the jerky, poorly coordinated movements and not notice that they become much worse in the presence of certain members of the problem, or when the child is apprehensive or excited. An important part of the treatment of the cerebral palsied child is the development of emotional control, so that the child does not "go to pieces" in each new situation. And whether and how readily he can acquire the desired emotional poise depends largely on the understanding and cooperation of the other members of the problem who are interacting with him.

Those physically handicapped children in public schools who find a friendly and accepting classroom atmosphere are fortunate. Such an atmosphere is largely the creation of the classroom teacher, whose attitudes and example set the tone of the whole room. Sometimes it may be well for the teacher to have a talk with the class in the absence of the handicapped child, explaining his problems and arousing sympathetic understanding. In many instances, however, there is no need for even an informal briefing of the rest of the class.

When confronted with a handicapped child, many people have an exaggerated reaction of pity. Some make the mistake of displaying such feelings—of letting the child know by word or act their feelings of pity. It is said that Alec Templeton, the famous blind British pianist, first became aware of his difference when a woman who was a complete stranger rushed up to him and cried, "You poor little blind boy!" Unfortunately one occasionally encounters such persons who obtrude their misguided and warped feelings into the lives of others. Even when there is no such mawkish display, if pity is one's predominant feeling, the child will soon sense this and the effect on him is likely to be unfortunate.

For no one wants pity. Even when we are depressed and despondent, when we feel that we are having a hard time, the frank expression of pity by another is for most of us embarrassing. But it is easier to endure being pitied because of temporary bad luck than to go through life receiving frequent misguided pity because of a physical difference. It is tremendously difficult to maintain self-respect and integrity in the face of incessant expressions of others' pity.

Apart from mawkishness and oversentimentality, pity fails

because it stops short. It is natural and entirely commendable to feel a sincere sympathy with another's misfortune. The finest expression of this feeling, however, is behavior which is likely to be helpful in minimizing the misfortune. Helpful behavior does not include pitying looks, sentimental sighs, or words of regret. The ways in which one can be most helpful to a person with a physical handicap depend in large measure upon one's special talents and abilities. But no one can be truly helpful who does not make the other feel that he is wholeheartedly accepted. Often the communication of this feeling is all one can do —and sometimes it is all that needs to be done.

Like everyone else, the physically handicapped individual wants—and needs and *deserves*—to be accepted as a person (if this cliché retains any meaning). Such acceptance implies the recognition of the unique personality of each individual. It implies the awareness of all his talents, abilities, and interests. When a physical handicap limits an individual's abilities, it is all too easy for us to react chiefly to the limitation. The more severely an individual is limited, the more we tend to concentrate attention on his deficits. Unfortunately for all concerned the real person may be lost behind his handicap, and his individuality concealed under a diagnostic label.

What is being said here applies not only to the physically impaired or the speech handicapped but also to all children—and all adults as well. Perhaps it is more obviously important in the case of the cerebral palsied child, for example. It may well be true that in seeking to help such a child the teacher will learn also how better to help other children.[64]

The teacher's wholehearted acceptance and sympathetic understanding of each individual child will almost automatically insure that her classroom is a friendly, warm, comfortable place. There is a healthy, good-humored acceptance of differences of all sorts. There is praise for success and help in case of failure. Each child in the classroom feels a sense of personal security. To the extent that she approaches this ideal—and any classroom teacher can come pretty close—she can make a tremendous contribution to the lasting benefit of any and every child.

64 See also McDonald, *Understand Those Feelings* (Pittsburgh: Stanwix House, 1962).

EIGHT



IMPAIRED HEARING

After the first week or ten days, most of the children in Miss Brown's kindergarten class were beginning to follow her instructions reasonably well. When she asked the group playing in the doll corner to put away their toys and join the circle for a story, they began to do as they were told—all but John. He continued with his play until Miss Brown went over and spoke directly to him; he then quickly did as he was told. Another day the children were out in the yard playing. When Miss Brown called to them to come in, they all came—that is, all but John. When the others were almost up to the door, he turned around, saw where they were going, and quickly followed. After the first such incident, Miss Brown began to wonder if John could hear normally. Later in the week the second incident made her more sure, and when he brought a book to share at "telling time" and had a great deal of difficulty making himself understood, she was sure he must have a hearing loss.

That evening Miss Brown called John's mother. To reassure her, she started by saying that John was doing fine, but she added that she was beginning to wonder if he might have some loss of hearing. The mother replied that she and his father had

wondered, too. Could Miss Brown tell them how to go about finding out what to do about it? Yes, the mother could ask the school nurse where the nearest clinic was. There John would be examined by an otolaryngologist (ear, nose, and throat specialist); later his hearing would be evaluated by an audiologist. Then, together, if a hearing loss were found, the otolaryngologist and audiologist would advise the parents how best to help their son. If the problem proved amenable to medical treatment, the otolaryngologist would care for it. If it were a kind of hearing problem that was not reversible, the audiologist would work out a plan whereby John could be helped to compensate for the hearing problem. In either case he should do well, for he was a bright little boy with parents who were eager to help him.

In any classroom of 35 or 40 children there is more than an even chance that there will be a child with a hearing loss.[1] The child just described showed behavior rather typical of children who are hard of hearing. He did not always follow instructions because he did not always hear them. His speech was difficult to understand because he spoke pretty much as he heard. Such behavior points to the fact that the sense of hearing, when considered clinically, has two dimensions—quality and quantity. And in addition, a loss in hearing must be viewed in terms of its effect upon communication, its duration in the life of the individual, its acceptance both intellectually and emotionally by the child and his parents, and the availability of facilities for rehabilitation in a given community. In this chapter the various aspects of hearing and hearing impairment will be discussed as they pertain particularly to the school age child, and especially to those children who hear in a normal enough manner, with or without a hearing aid, to be able to attend a public school for normally hearing children.

Not long ago a mother brought her 10-year-old boy into the Hearing Clinic at the Childrens Hospital of Los Angeles because he had an earache. After the doctor had examined his ears, his hearing was tested by the audiologist and found to be sufficiently impaired to be causing him to have some difficulty in the school-

[1] S. R. Silverman, H. S. Lane, and D. G. Doehring, "Deaf Children," in Hallowell Davis and Silverman, eds., *Hearing and Deafness*, rev. ed. (New York: Holt, Rinehart, and Winston, 1960), chap. 16.

room. The mother commented that she had known of the existence of the hearing loss for some time. When asked if she had ever discussed it with his teacher, she said, "No, she has never complained about him, other than to say that he doesn't pay very good attention in class, but I didn't think that had anything to do with his having a hearing loss." The audiologist explained the probable relationship between the child's behavior and the hearing problem and obtained permisson to write a letter of explanation to the teacher. Knowing why this little boy's attention wandered at times would help the teacher to place him in her classroom so that he could better adjust to the hearing loss. And perhaps the next time she found a child in her class who had difficulty paying attention she would be alerted to the possibility of deficient hearing as a cause of the behavior and would refer him for proper oto-audiologic evaluation.

BASIC CONCEPTS CONCERNING SOUND

Before a hearing loss can readily be understood and appreciated, it is essential to understand a few simple facts concerning the nature of sound and how the ear detects it. The reader will recall that the basic concepts of sound and sound production were discussed in Chapter Four. The following brief remarks are presented in the present context in order to relate the acoustic principles explained in Chapter Four to the particular problems of hearing or sound reception.

The nature of sound First of all, we must remind ourselves that sound is vibration.[2] It has its origin in the vibration of a sound source. The vibrating strings of a violin, the vibrations of the loudspeaker of a radio, or the vibrations of the human vocal folds create sounds. The air itself is set in motion by the sound source and the vibrations of the air are transmitted to the ear. The ear is able to detect the vibrations of the air because its parts are set into vibration by them.

FREQUENCY AND PITCH. If we are to understand how the ear functions, we must also remember that there are a number of

[2] Davis, "Physics and Psychology of Hearing," in *Hearing and Deafness, op. cit.*, chap. 2.

ways in which sounds vary. Sounds differ from each other if their vibrations occur at different rates; that is, some sounds have higher rates of vibration than others. Rate is expressed as the number, or frequency, of complete vibrations, or cycles, per unit of time, usually per second. We say in brief, therefore, that sounds differ in frequency. The important thing to understand is that sounds of different frequency are heard as different in *pitch*. High-pitched sounds are those of high frequency and low-pitched sounds are those of low frequency. A high soprano voice is perceived as high-pitched, and its tones are of high frequency; a deep bass voice is perceived as low-pitched, and its tones are of low frequency. The sounds which the normal ear can hear extend over a wide range of frequencies, from about 16 complete vibrations or hertz (Hz), which is about four octaves below middle C, to as much as 16,000 Hz. Most of the sounds of speech lie within a range from about 250 Hz to 4,000 Hz. (As pointed out in footnote 1, Chapter Four, the unit of measurement formerly called "cycles per second," or cps, is now being referred to as the "hertz," or Hz.)

INTENSITY AND LOUDNESS. Sound is a special kind of energy—vibratory energy. There is more energy in some sounds than in others. Even sounds of exactly the same frequency may differ a great deal in the amount of energy they manifest. The term used to indicate the amount of energy in a sound is "intensity." The intensity of sound is perceived by the ear as its "loudness." Sounds which have a great deal of energy, such as the noise of an airplane engine, are sounds of high intensity, and to the ear they seem very loud. Sounds which have very little energy, like a low whisper, are sounds of low intensity, and they seem very weak as they are heard.

The unit ordinarily used as a measure of how much more intense one sound is than another is the decibel (dB). It is not an easy unit to define, but it may help to know that the normal ear is capable of comfortably responding to a range of sound intensities of about 100 dB. If sounds have too little energy, the ear cannot hear them; if they have too much energy, they are so intense that they cause the ear to tingle or even to feel pain. In the middle range of sound frequencies (from 250 to 4,000 Hz) there is a difference of about 100 dB in intensity between sounds

that can just barely be heard and those that cause the ear to tingle or feel pain.

WAVE COMPOSITION AND TIMBRE. Most sounds, including those of speech, as we learned in Chapter Four, are complex sounds. They involve not one but a large number of different frequencies of vibration occurring together. As has been said, frequency is the measure of the number of times per second a vibrating particle goes through a complete cycle. The engineer further defines a complex vibration, or complexity of vibration, by saying that something is vibrating at several frequencies at the same time. In general, the larger the number of separate frequencies of vibration present in a sound, the more complex the pattern of vibration. The wave composition of a sound is heard as that sound's quality of resonance or timbre. Some sounds are made up mainly of vibrations of low frequency and others are made up primarily of vibrations of high frequency. Some vowel sounds, such as *ah* and *oo,* are mainly composed of vibrations which are low in frequency. Other kinds of sounds, for example, *s* and *f,* are composed primarily of high-frequency vibrations. The importance of understanding higher and lower vibration frequencies among speech sounds will become apparent during the discussion of the way in which different kinds of hearing losses affect a person's ability to understand and to produce speech.

THE ANATOMY OF THE EAR

The ear appears as one of the most complicated organs in the body when studied in detail.[3] For purposes of this discussion it will be sufficient to understand it only in its three main divisions: the external ear, the middle ear, and the inner ear which is well hidden in the temporal bone of the skull.

The external ear and the middle ear The external ear is composed of the appendage on the side of the head that children learn to call "the ear," together with a canal lined with skin, at the inner end of which is the eardrum or the tympanic membrane. On the inner side of the eardrum is a small cavity known as the middle ear. Inside the middle ear are three tiny bones:

[3] Stephen L. Polyak, Gladys McHugh, and Delbert K. Judd, *The Human Ear in Anatomical Transparencies* (New York: McKenna, 1946).

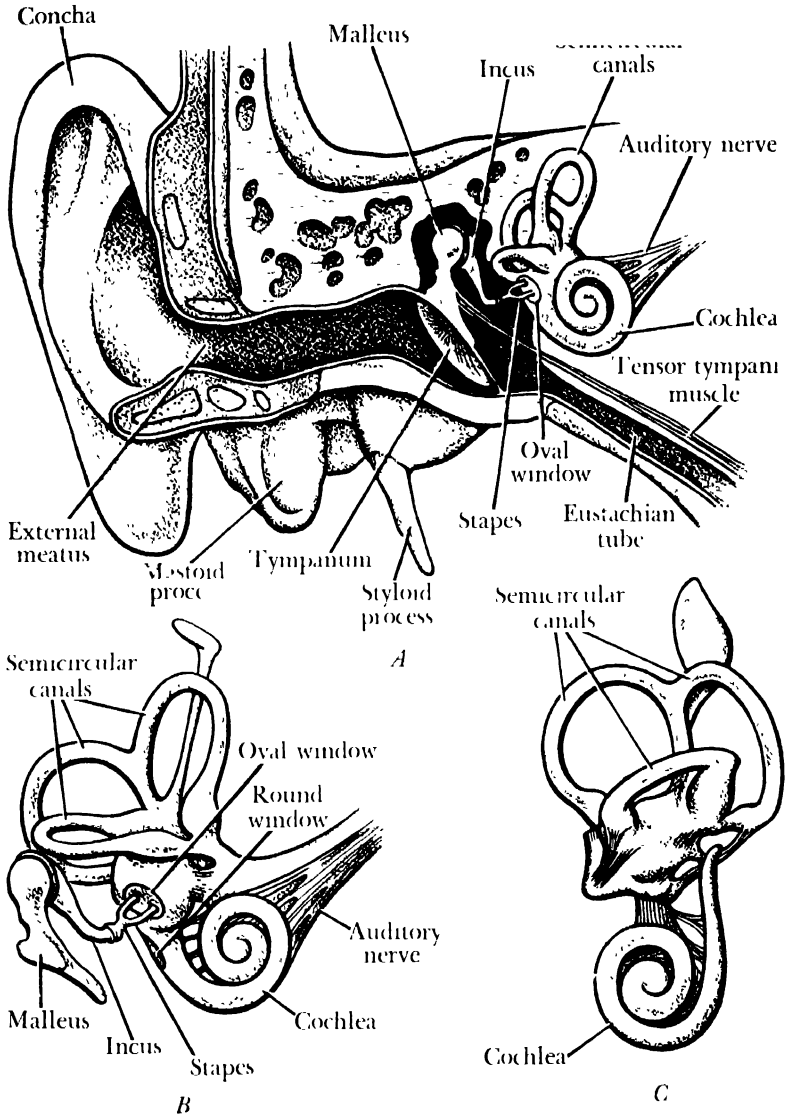


Figure 10. Diagram of the ear, showing: *A*, a cross section of the human ear; *B*, articulation of stapes at the oval window; *C*, osseous (bony) cochlea and semicircular canals.

the malleus, the incus, and the stapes. The malleus (hammer) is attached to the eardrum. The middle bone, the incus (anvil), forms a bridge between the malleus and the stapes. The stapes (stirrup) connects, by means of the oval window, with the inner ear. The little bones, or ossicles, as they may also be called, are attached to their moorings by means of ligaments and tiny muscles, and they move whenever the eardrum moves, as it does when sound waves impinge upon it. The vibrations of the eardrum are determined by the air vibrations that strike against it; the three little bones carry the vibrations of the eardrum across the middle ear to the inner ear, which contains the sensitive endings of the nerve of hearing. It is interesting to note that the little bones or ossicles in the middle ear are fully grown at birth and are the smallest bones in the body. Sometimes diagrams of the middle ear give a false impression of the size of the cavity. In actuality it is so small that it can contain only about 10 drops of water.

The inner ear The inner ear is composed of three essential parts: (a) the semicircular canals, which are thought to be concerned only with the sense of equilibrium or balance; (b) the snail-shaped structure called the cochlea, which contains the sensitive endings of the auditory nerve; and (c) the vestibule, which connects the semicircular canals with the cochlea. The stapes (stirrup) fits into an opening known as the oval window which lies between the middle ear and the vestibule. When the stapes is moved by air vibrations impinging upon the eardrum, it sets up corresponding movements of the fluid that fills the vestibule. These movements in turn excite the nerve endings in the cochlea. The resulting excitations, or impulses, travel along the auditory branch of the eighth cranial nerve to the brain, causing the sensation known as hearing.

THE EXTENT OF HEARING IMPAIRMENT

Hearing impairments vary in extent and in type. In terms only of extent of their impairments, children with hearing losses may be divided into three groups:[4]

[4] John J. O'Neill, *The Hard of Hearing* (Englewood Cliffs, N.J.: Prentice-Hall, 1964), p. 3.

Group I. Children whose hearing losses are mild. (They can hear sounds that are 20 or more dB louder than a standard tone produced by a machine called an audiometer. This standard tone is represented by what is called zero reference level[5] on the audiogram; the audiogram is a form on which the results of an audiometer hearing test are recorded.

Group II. Children whose losses are moderate. (They can hear sounds that are 40 or more dB louder than the zero reference tone.)

Group III. Children whose losses are severe. (They can hear sounds only if they are 60 or more dB louder than the zero reference tone.)

The hearing deficiency of a child whose loss is mild may easily go unnoticed in the regular classroom. The child might occasionally ask to have a direction repeated but in all probability not often enough to attract the attention of the average person. It is because of children in this group particularly that routine hearing tests should be given in every public school system at regularly scheduled intervals. Medical treatment for the improvement and conservation of hearing is known to be more effective in early hearing loss than in chronic severe cases. Early detection, diagnosis, and treatment of hearing losses of children in Group I may help to prevent their joining the ranks of Groups II and III later on in their school careers or in adulthood.

Types of hearing loss When there exists in either the external or the middle ear an abnormal condition that interefers with the transmission of vibratory energy, the type of hearing loss that results is called "conductive." Interference with the passage of sound wave energy from the outer to the middle ear may be caused by wax or any hard substance obstructing the auditory canal or being impacted against the eardrum and restricting its movement. The passage of vibratory energy across the middle ear or from the eardrum to the oval window may be obstructed by such conditions as swelling in the mucous membrane that lines the middle ear cavity; or by pus, scar tissue, or serous fluid of varying viscosity which hamper the movement of the ossicles (little

[5] For the meaning of "zero reference level," see "The Pure-Tone Audiometer" in the section on *Hearing Tests,* immediately following.

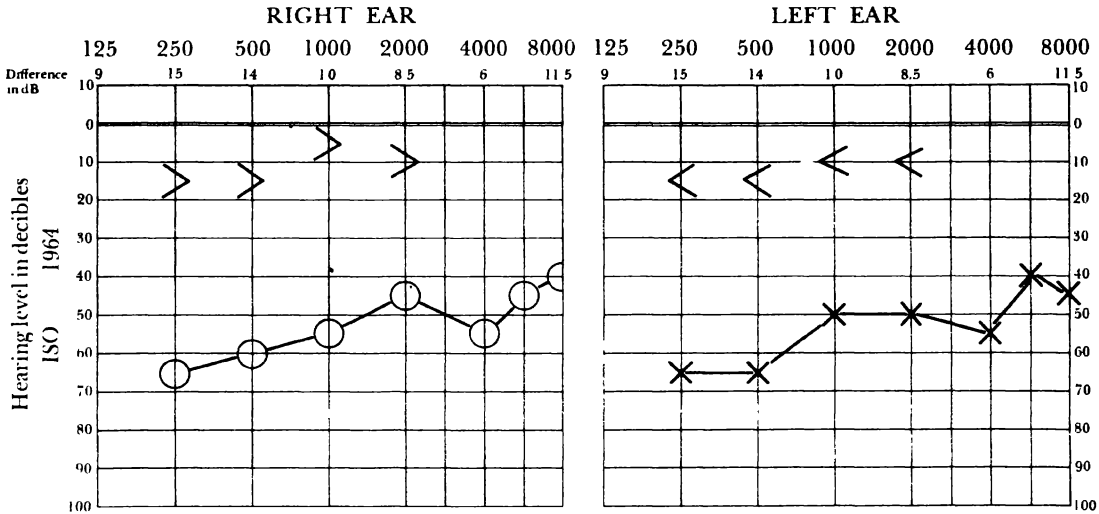


Figure 11. This audiogram illustrates the *conductive type hearing loss.* The circles (O) indicate the intensity at which the child heard each tone by air conduction in the right ear. For example, she heard 250 hertz (Hz) at 65 decibels (dB) below normal threshold (marked with a heavy black line). The crosses (X) indicate the intensity required for her to hear each sound in the left ear. For example, she heard 500 Hz at 65 dB below normal threshold. Bone conduction is indicated by > for the right ear and by < for the left. (To convert ISO readings to ASA readings, subtract appropriate "difference in dB" at each frequency.)

bones), keeping them from conducting the full effect of eardrum vibration to the oval window. Recent advances in ear surgery have revealed that in some cases there are deformities in the ossicular chain which are probably present from birth. Such abnormalities can cause conductive hearing losses of as much as 60 dB (with such a loss the individual can hear sounds only if they are 60 or more dB louder than the audiometric zero reference tone.)[6] Before the discovery of these deformities, such losses, in the absence of obstruction or infection, tended to present a puzzling diagnostic problem. Now, however, surgical correction is possible in some cases.[7]

A typical conductive type hearing loss tends to reduce the loudness of all tones or sounds by an approximately equal amount. That is, a person with a substantial middle ear loss hears speech as though he were in the next room with the door closed. By holding your fingers in your ears while someone talks, you can get an approximate idea of this kind of hearing loss. The audiogram shown in Figure 11 illustrates such a loss.

Another kind of hearing loss is caused by damage to or abnormal development of the end organ (cochlea) or the nerve of hearing. This type loss is best referred to as "sensorineural" because this term properly limits the problem to the peripheral auditory mechanism—that is, to the ear, in this case the inner ear, and its attached nerves of hearing, rather than to the central mechanism of hearing in the brain itself. This type loss is also called "nonconductive" by some authorities, differentiating it from the conductive type loss described above. Such a loss is sometimes congenital (existent from birth); or it may be adventitious (added by disease or injury after birth). A hearing loss of the sensorineural type usually affects the high-pitched sounds more than the low ones. That is, a person with such a loss may hear the sound of a whistle an octave higher than middle C at an intensity level no greater than that required by the normal ear, but he will hear tones higher in pitch only when the intensity is greatly increased. He may not hear some very high-pitched sounds at all. Usually, the higher the pitch the greater the in-

[6] Stanley Smith Stevens and Davis, *Hearing, Its Psychology and Physiology* (New York: Wiley, 1938), p. 252.

[7] Victor Goodhill, *Stapes Surgery for Otosclerosis* (New York: Hoeber-Harper, 1961).

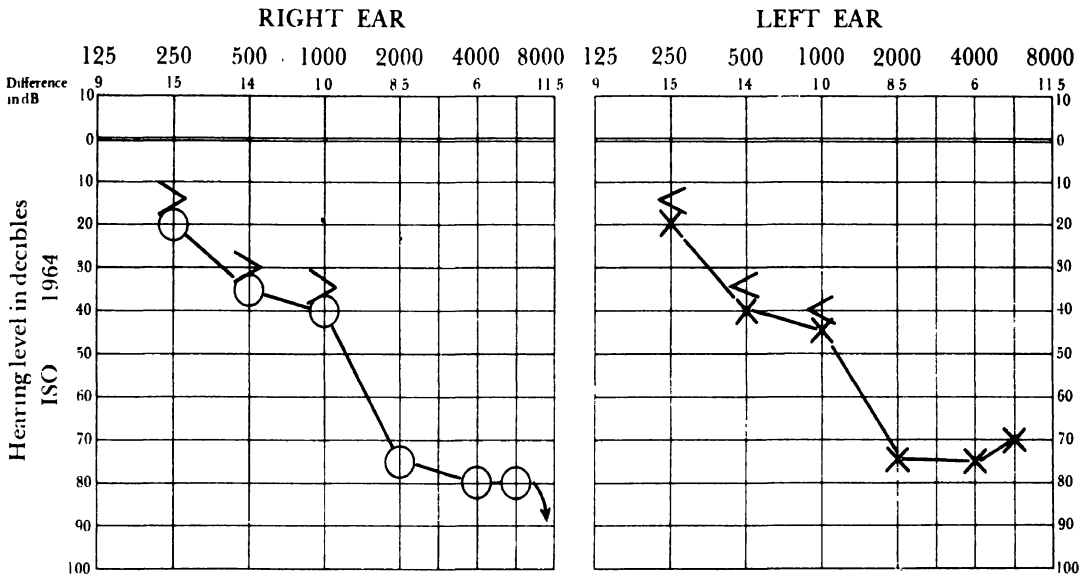


Figure 12. An audiogram illustrating a *sensorineural* (*nonconductive*) *type hearing loss.* Bone conduction curves follow approximately those for air conduction in this audiogram. (To convert ISO readings to ASA readings, subtract appropriate "difference in dB" at each frequency.)

tensity required for a sound to be heard by the ear with a sensorineural type loss. The audiogram in Figure 12 is a rather typical illustration of such a problem.

A third kind of hearing loss is a combination of the first two and is referred to as a "mixed type." The conductive mechanism of the middle ear may have become impaired through some chronic condition which also may have affected the nerve of hearing. Or, as is sometimes the case with a child, a conductive problem caused by ear infection or serous effusion may be superimposed upon an already existing sensorineural hearing loss. Treatment of the conductive element of the problem may effect a significant improvement in the child's hearing.

HEARING TESTS

The 4-C phonograph audiometer Mass hearing testing of school children from about the third grade up, aimed at hearing conservation, was started in this country about 1924 with the development of the 4-C phonograph audiometer.[8] It is rarely, if ever, used now in an actual test situation. Other methods that yield more information are available and are just as economical to administer. The best of the group tests in current use employ the same basic principles as the pure-tone audiometer.

The pure-tone audiometer Hearing losses differ in two respects: in extent and in type. Both characteristics are testable by means of the pure-tone or discrete-frequency audiometer.[9] This instrument may be used to test only one child at a time or it may be set up in such a way as to test 10 or more simultaneously. The audiometer is simply an oscillator that produces pure tones with controlled intensity and frequency within the range of human hearing. With most pure-tone audiometers in common use hearing can be tested for tones (frequencies) of 125, 250, 500, 1,000, 2,000, 3,000, 4,000, 6,000, and 8,000 Hz. The intensity of the tones can be varied from below audibility to levels up to 70 dB for the low and high frequencies or to 100 dB for the middle fre-

[8] Loraine A. Dahl, *Public School Audiometry* (Danville, Ill.: Interstate, 1949).

[9] Ira Hirsh, *The Measurement of Hearing* (New York: McGraw-Hill, 1952).

quencies above the average threshold of hearing. This means that loudness can be varied from a point where a sound is just audible to the ear to a point where it may seem as loud as a factory whistle when the earphone is held close to the ear.

Zero reference level on both the audiometer and the audiogram represents the threshold for so-called normal hearing and, therefore, is the standard against which hearing acuity is measured. The American Standard for Audiometers (ASA), in use in the United States before 1964—based on determinations of the threshold of hearing in "normal" ears made in the United States National Health Survey in 1937—is being replaced by the standard of the International Organization for Standardization (ISO).[10] The ISO standard is based on British determinations made 15 years later than the American ones and with more modern equipment, better acoustic conditions, and improved psychoacoustic techniques, and is regarded as representing normal hearing threshold more accurately than the ASA. International use of ISO standards means that audiograms can be regarded as comparable, country to country. During the changeover period it is extremely important that every audiogram be clearly labeled to indicate the scale according to which it was plotted. Since the difference between the ASA and the ISO scales is a matter of a few dB at each frequency, it is an easy matter to go from one scale to the other with simple additions or subtractions. Until the changeover has been completed, a conversion table should appear on the audiogram blank.

When a test using the audiometer is administered to a single child, he wears a pair of earphones attached to the audiometer. Whenever he hears the sound, he signals in some fashion agreed upon by him and the person giving the test. His responses are recorded on the audiogram. By comparing the test results of any child with the accepted norm, one can easily determine how much more intense each tone must be for that child to hear it than for a child with a normal ear.

Children below the third-grade level not always can be given

[10] Davis and Fred W. Kranz, "The International Standard Reference Zero for Pure-Tone Audiometers and Its Relations to the Evaluation of Impairment of Hearing," *Journal of Speech and Hearing Research* (1964), 7:7–16; and Davis, "Correction to the International Standard Reference Zero for Pure-Tone Audiometers," *ibid.* (1965), 8:98.

a satisfactory hearing test with the group audiometer. But Myklebust, using an individual pure-tone audiometer with members of a group of normally hearing preschool children, found that it was possible for 5-year-olds in his experimental group to respond to a test tone at threshold if an attempt was made to relate the audiometric technique to something concrete in the child's experience.[11]

During the course of a year, a large percentage of patients who are referred to the Hearing and Speech Clinic, Childrens Hospital of Los Angeles, for diagnostic evaluation are sent because of hearing losses discovered in school testing programs. Frequently the audiogram sent by the school is markedly different from that obtained by the audiologist at the hearing center. These differences are often greater than can be accounted for on the basis of differences in physical test conditions alone.

On an empirical basis, it had been our observation that in our own clinics we were getting close agreement between audiograms on a series of tests. In the light of these observations of both agreement and lack of agreement, we decided to examine our own test findings critically by running two test series on a group of 100 patients ranging in age from 5 to 12 years.[12] An attempt was made to choose a group of children who were normal in every way aside from a suspected hearing problem. The first series was run by an experienced audiologist and the second series by a graduate student with little more than textbook knowledge of the procedure being followed. Test conditions were approximately the same for both series. Mean correlation coefficients (r) between the two examiners, by ages of the children tested, will be seen in the table following:

Age	5	6	7	8	9	10	11	12
r	.879	.888	.936	.957	.895	.944	.927	.917

These figures indicate that there was not only close agreement between results obtained by the examiners in each age group (perfect positive agreement would have a value of 1) but also

[11] Helmer Myklebust, *Auditory Disorders in Children* (New York: Grune and Stratton, 1954), pp. 263–266.

[12] Jacqueline Keaster, "The Reliability of Hearing Test Results on a Random Population of Children in a Clinical Setting," unpublished study (Los Angeles, 1960).

little variation from one age group to another. The lowest correlation is at the 5-year level. But the highest correlation is at age 8 rather than at age 12 as might be expected. In general, however, the differences from age to age are small. Because the difference between correlations at ages 5 and 12 is so slight, there would appear to be some evidence that one may expect to get reasonably close reliability on pure-tone tests with 5-year-old youngsters as well as with older ones if the examiner has well calibrated equipment, is able to control his test conditions, and makes sure that his instructions are well-understood. We have been impressed with the fact, however, that it is easier to hold the attention of the younger children if the mode of response used seems like a game to the child being tested.

The most satisfactory approach to testing the hearing of a large number of little children is with the sweepcheck method. The tester sets the audiometer at a given loudness level and sweeps through the spectrum for 250 to 8,000 Hz. The child responds by indicating when he hears a stimulus tone. A sweepcheck test may be administered either individually or in groups of 10, following a method described by Johnston.[13] It is possible in many cases to obtain a reliable test of children of kindergarten age and beyond using either individual or group technique.

Before any test it is extremely important to make sure that the test room is reasonably quiet. If, before beginning to test, the tester will have his own hearing tested in a sound-treated room, he will provide himself with a readily accessible norm of environmental noise level effects to go by. Then when he is ready to test children in a room that he considers to be reasonably quiet, he will check his own hearing first and compare the results with those obtained in the sound-treated room. If the threshold of the tester is shifted upward beyond 15 dB on the intensity dial of the audiometer as a result of noise in the room, then tests of hearing should not be performed in that room. One possible exception would be when the shift occurs at 250 Hz only. In such a case tests could be performed, but the 250-cycle frequency would not be tested.

In addition to the need for quiet during testing, there is a

[13] Philip W. Johnston, "An Efficient Group Screening Test," *Journal of Speech and Hearing Disorders* (1952), *17*:8–12.

need to avoid distractions. There should be as few of them as possible; the sudden appearance of a stray dog can throw off the hearing testing of a whole roomful of kindergarten children. And it goes without saying that equipment used for testing hearing should be calibrated regularly, that is, checked to make sure that the frequency and intensity are accurate.

The group pure-tone audiometer The pure-tone audiometer has been adapted for group use in several ways.[14] In one version of this test, 40 earphones may be attached to a specially constructed pure-tone audiometer. Sounds are presented at approximately one, two, three, and four octaves above middle C on the piano (500, 1,000, 2,000, and 4,000 Hz). Each tone is sounded in one, two, three, or four spurts at controlled levels of loudness. The children being tested write down on a specially prepared blank the number of times they think they hear each tone presented. With this procedure it is possible to determine the extent of the loss with respect to each frequency for which the hearing is deficient. As many as 40 children can be tested in about 45 minutes. The test has been used successfully with children as young as those in the third grade.[15] To test the hearing of a large number of first and second graders with any degree of reliability it is necessary to use an individual test with a pure-tone audiometer. No group test yet devised has been found suitable for children of this age level.

Watch tick and voice tests In an occasional school where hearing testing equipment is not available, hearing is sometimes tested with a ticking watch or with spoken or whispered voice. Supposedly if a child cannot hear a forced whisper across the average classroom, he has a loss in hearing. Such a test gives only

[14] Hayes A. Newby, *Audiology*, 2nd ed. (New York: Appleton-Century-Crofts, 1964), pp. 205–216.

[15] Newby, "Group Pure Tone Hearing Testing in the Public School," *Journal of Speech Disorders* (1947), *12*:357–362. For information on other tests and testing methods see C. V. Hudgins, J. E. Hawkins, J. E. Karlin, and S. S. Stevens, "The Development of Recorded Auditory Tests for Measuring Hearing Loss for Speech," *Laryngoscope* (1947), *57*:57–89; James P. Eagan, "Articulation Testing Methods," *ibid.* (1948), *58*:955–991; Keaster, "A Quantitative Method of Testing the Hearing of Young Children," *Journal of Speech Disorders* (1947), *12*:159–160; and Harriet Haskins, "Kindergarten, P-B Word Lists," unpublished M.A. thesis (Northwestern University, 1948).

the crudest estimate of hearing and should be discouraged because it may be very misleading.

Hearing conservation programs Within the next decade, hearing conservation programs should be set up in all 50 states to provide audiometric screening tests for all school children, individual, pure-tone audiometer tests where they are needed, and adequate medical and educational follow-up for any child with a hearing loss.

CLASSROOM CONSIDERATIONS

Before we discuss the speech problems of children with hearing losses, it will be helpful to consider briefly the possible over-all behavior characteristics exhibited in the classroom by a child with sufficient loss of hearing of any type to cause him to have difficulty following classroom activities, particularly those requiring oral communication. In this situation the teacher and his classmates become, with him, members of the problem. Their interaction with him is as important as the fact of the hearing loss. Such a child, as he sits in school, may hear only part of what his teacher says. He may, in consequence, become disinterested in the lesson and try to find other things to do to provide diversion. The pastimes he finds may be very disturbing to the rest of the class. On the other hand, he may make a great deal of effort to hear what is being said. He may hear only part of a question, however, and in attempting to answer it may make a ridiculous statement that is amusing to the rest of the class. The hard-of-hearing child, like any other, does not like to be laughed at. In time he may cease to try to recite. Gradually he may tend to withdraw from his peer group. Either problem, disturbing behavior or withdrawal, develops from a feeling of insecurity, from not quite knowing what is going on around him. The teacher can do a great deal to help him by:

1. Having him sit as near as possible to where she is likely to be most of the time.

2. Allowing him to move freely about the room in order to hear what is going on. For example, if another pupil or the teacher is demonstrating a class project at a desk near the back

of the room, it will help the hard-of-hearing child to participate if he may walk quietly back to the center of activity. It is a rare child who will abuse such a privilege.

3. Being sure, when giving a direction, that the hard-of-hearing child is following what is being said. One effective way to check is to ask him occasionally to repeat the direction to the rest of the class.

4. Finding a time to explain the problem of the hard-of-hearing child to other members of the class. Few children will tease or taunt another child if they know why his reactions are sometimes different from those in the rest of the group. What was said in this connection in Chapter Two applies fully to the child with a hearing problem.

5. Helping him to understand and to acknowledge his hearing problem. This is one of the most important aspects of any handicapped child's problem, but it is especially important for the hard-of-hearing. If a child learns early in life to say when meeting a stranger, "I am hard of hearing and so may not always understand what you say," he will meet people on common ground with no apologies and with nothing to hide. And in consequence, he will meet new situations without tension, and so will be able to follow conversation to the limit of his ability. Often one meets a hard-of-hearing child who tends to smile sweetly and nod his head in agreement regardless of what is said to him. If a direct question is put to him, one is likely to discover that he really didn't understand much of what was said but was afraid to acknowledge it. Somehow he must be helped to realize that his acceptance as a human being does not depend upon his always appearing to understand. Each of us in the course of a day finds it necessary to say to someone, "I'm sorry, I didn't understand what you said."

6. Allowing him to recite and to read orally just like any other member of the class. Some hard-of-hearing children have speech and language problems as a result of the hearing loss, or from some other cause. This should not be a reason for not allowing them to participate in oral recitations.

7. Seeing to it that he is included in as many extracurricular activities as possible that are participated in by his classmates. Frequently a hard-of-hearing child is a bystander when a group

game is being played simply because he didn't hear the rules clearly and doesn't want to ask. With a little help from the teacher he may be able to become a more active member of the group.

The foregoing suggestions are not merely special techniques for the hard-of-hearing; rather they are for the most part common-sense procedures practiced every day by all good teachers. Any or all of them can be of tremendous assistance in helping a child adjust to a hearing loss.

TYPES OF HEARING PROBLEMS

At the beginning of this chapter it was said that a hearing loss could be described in two ways: first, by its extent—mild, moderate, or severe; second, by its type—conductive loss (outer- or middle-ear pathology); sensorineural loss (inner-ear pathology); or mixed loss. In addition, three other terms are sometimes used in speaking of persons with hearing loss: "hard of hearing," "deafened," and "deaf." When these words are thought of in relation to the speech process their meaning and proper use become immediately clear.

A hard-of-hearing child is one who has sufficient hearing to learn to produce and to understand speech and language naturally by ear. The speech and language he has may be impaired, though not necessarily, but they serve him for purposes of oral communication. He has some hearing—the loss may range from mild to very severe, but he is not deaf.

The deafened child is usually spoken of as one who has developed an awareness of speech and language naturally by ear but who no longer has sufficient hearing to enable him adequately to hear his own speech or that of others with or without a hearing aid. The extent of his speech and language problem will depend upon the age of onset of the loss. He will require special help if he is to continue to develop language and vocabulary. A child who lost his hearing at the age of 5 as a result of meningitis would be in this category.

And, lastly, a deaf child is one who, at the time of life when speech and language usually develop, did not have sufficient hearing to make its natural acquisition possible.

The hard-of-hearing child is seen most often and so will be discussed first.

The hard-of-hearing child

CONDUCTIVE HEARING LOSS. Frequently one sees children in elementary schools who had normal hearing during their preschool years but who now have a mild to moderate conductive type of hearing loss as a result of an obstruction in the external ear such as wax or a foreign body or a middle-ear infection.[16] This means that their acuity for all pitches (or frequencies) is probably reduced by an approximately equal amount throughout the range of frequencies important in speech (250 Hz through 4,000 Hz). Usually they hear at a relatively normal intensity through bone conduction. Acuity of hearing by means of bone conduction is measured by placing a vibrator, attached to the pure-tone audiometer, against the mastoid process, the area immediately behind the ear. The bones of the head vibrate in correspondence to the air vibrations beating upon them as a result of the action of the vibrator. The person being tested responds just as he does when air conduction acuity is being tested. If he has a pure middle-ear or conductive type loss, he will hear sounds at approximately normal intensity through the bones of the skull. This implies that the nerve of hearing is in good working order. Such a test is used for diagnostic purposes by a physician or an audiologist and is not usually a part of school screening tests.

A child with a middle-ear loss probably will have normal speech; if he does not, the cause is likely to be found apart from the hearing problem. Such a child, 7 years old, who was seen recently by the writer, had a moderately severe middle-ear type hearing loss. In speaking she substituted the voiceless *th* sound for *s* and *w* for *r*. She was able to produce each sound normally the first time she was asked to imitate it when it was said for her correctly. Neither sound, therefore, was thought to be misarticulated as the result of the hearing loss. If a child with a mild to moderate conductive loss has an articulation problem, there should be careful checking before any assumption is made that

[16] Robert West, Lou Kennedy, and Anna Carr, *The Rehabilitation of Speech*, rev. ed. (New York: Harper & Row, 1947), p. 227; and Keaster, "Children with Impaired Hearing," in Wendell Johnson, ed., *Speech Problems of Children* (New York: Grune and Stratton, 1950), chap. 11.

the hearing loss and the articulation problem have a cause-and-effect relationship.

Sometimes a child with a conductive loss, especially if he tends to be a shy, retiring youngster, will talk so softly that he can scarcely be heard in an ordinary classroom. Part of the problem may be shyness and part of it may be due to the fact that he hears his own speech louder than he hears the speech of others. His own voice reaches his nerve of hearing with normal intensity because his vocal cord vibrations set up head-bone vibrations that are then conducted normally through his inner ear (which is intact) to his nerve of hearing. So he hears his own voice normally. But when others speak, their voices reach his outer ear as air vibrations rather than as bone vibrations; and his impaired middle ear does not conduct the vibratory energy of the air efficiency to his normal inner ear; therefore, the voices of others do not seem as loud as his own. And for the same reasons, his voice sounds relatively louder to him than it sounds to his listeners. By telling him to "talk louder" or to "speak up," the teacher (or clinician) will not accomplish very much. But if she will take a few minutes now and then to help him recognize the loudness level he should maintain in order for others to hear him easily, she will be doing a great deal for him. She can, in other words, help him to work out his own measuring stick for monitoring and regulating the loudness level of his own speech.

In summary, a child with a middle-ear impairment or a problem resulting from an obstruction in the external ear will probably have little or no speech problem as a result of his hearing loss, with the possible exception of a little difficulty in keeping his voice loud enough for his classmates or other listeners to hear him easily. As has been suggested, the teacher might help him learn to recognize a loudness level that is best for his listeners.

SENSORINEURAL HEARING LOSS. The problem of the child with an inner-ear impairment, or a sensorineural loss, is frequently misunderstood. This is partly because at times the child's responses to sound appear to be inconsistent. Sometimes he responds and sometimes he doesn't. He usually responds to his name when it is spoken in an ordinary tone of voice. When asked to do something, however, he frequently does not understand the

directions, particularly if it is something that he is not in the habit of doing. His parents and even his teachers accuse him of not paying attention and of hearing only when he wants to. Actually he is probably paying very close attention, but sometimes, especially when the subject matter is unfamiliar, what he hears is just a jumble of sound that doesn't make sense. The mishmash makes the most sense to him when the situation shows clearly what is being discussed, or when he is hearing familiar words about activities or things to which he is accustomed. Children with sensorineural hearing loss often have faulty speech and language directly due to the hearing loss, particularly if the loss has existed from birth or early infancy.

A sensorineural loss typically affects the high-pitched sounds more than the lows. A child with such a loss might hear sounds of low pitch or frequency at comparatively normal intensity, but tones of higher pitch or frequency only when the intensity is markedly increased. (See the audiogram in Figure 12.)

Here it should be mentioned that there are still a good many questions to be answered about how the human ear hears speech. We do know that the vowels are predominantly low-pitched sounds.[17] It can therefore be assumed that a child with essentially normal hearing for low-pitched sounds can hear and produce most vowels normally. His acuity for medium-pitched sounds may be somewhat reduced but he probably hears such sounds as *m, n, ng,* and *l* with enough clarity to be able to produce them normally. High-frequency sounds like *s, sh, ch,* and *j* are likely to be distorted or omitted in his own speech, primarily because he does not hear them well. Such sounds as *f* and voiceless *th, v* and voiced *th, t* and *k,* and *d* and *g* are frequently interchanged in his speech because he has difficulty telling the difference between the members of these pairs of sounds when he hears them. Sounds that can be imitated and in part understood visually, such as *p* and *b,* are more often perceived correctly and are less likely to be misarticulated than some of the others.

The voice of a child with a moderate or severe sensorineural type hearing loss is likely to be unusually loud. It may have a muffled kind of quality as though his mouth might be full; this

17 Raymond Carhart, "Conservation of Speech," in *Hearing and Deafness, op. cit.,* chap. 14.

appears to be largely the result of a retracted tongue in the production of such sounds as *t*, *d*, and *n*. The pitch, as well as the loudness, of the voice is frequently very monotonous. The child with inner-ear impairment shows reduced hearing acuity by bone conduction as well as by air conduction. On an audiogram the air and bone curves tend to be much the same. When a classroom teacher has a pupil with speech and voice deviation comparable to that just described, she should refer him as soon as possible to the person in the school system who gives hearing tests with a pure-tone audiometer.

The extreme importance of this point is well-illustrated by a case that came to our attention recently. A child, aged 9, was referred to us by an ear, nose, and throat specialist for an evaluation of her hearing. The father and mother disagreed about whether this child actually had a hearing loss. Her sibilant sounds were distorted, and she substituted *t* for *k* and *d* for *g* and had a voice quality that sounded as though her mouth might be full. It was immediately apparent to the examiner that a hearing loss probably existed. A pure-tone audiometric test was completed. She was found to have normal hearing through 500 Hz, a drop to 35 dB at 1,000 Hz. In one ear, she did not hear the 2,000 Hz tone at all; in the other ear, she did not hear it until it reached an intensity of 90 dB above the zero reference level. She did not respond at 4,000 and 8,000 Hz in either ear.

This child was in regular public school in the fourth grade and had been making reasonably good progress. She had learned to read quite adequately and was receiving speech instruction in the public school remedial speech program. She had problems with spelling and was beginning to have difficulty with reading because of the increasing complexity of the vocabulary. The father contended that the child was inattentive when she failed to carry out instructions he gave her. The mother felt that there might possibly be a hearing loss. The speech specialist had not done a hearing test. Placement of the child in a school for hard-of-hearing children was then considered. An alternative to this placement was a smaller classroom where she could have more individualized instruction than she received in a class of 40 children. She was an excellent speech reader (lip reader) and carried on very well in a conversation with one or two persons, but in a

larger group she had trouble following what was said. This is a clear example of a child who, because she could hear some sounds and not others, caused confusion in the minds of her parents and teachers over the possible existence of a hearing problem. Whenever there is doubt, a child should always be referred to an audiologist for a thorough evaluation.

In order to prevent the occurrence of such instances as the foregoing, it is imperative that a pure-tone audiometric test be given as soon as possible to evaluate the hearing of children whose responses to sound appear to be inconsistent. The speech of these children is usually characterized by the omission or distortion of sibilants, by the interchange of fricatives, by a decrease in nasal resonance, and by a monotonous pitch pattern or undue loudness. If, after hearing tests at the school are completed, there is the least question of the existence of hearing impairment, the child should be referred first to an otolaryngologist for an examination of his ears, nose, and throat and to an audiologist for more detailed hearing tests. These tests should include those that measure threshold for speech, that is, how loud the speech sample must be before the child can respond reliably 50 percent of the time, and those that measure his ability to understand speech. The latter ability is tested by using lists of phonetically balanced monosyllabic words chosen from a standard kindergarten word list.

Most children learn to talk by imitating the speech of their parents and older siblings. Sometimes a child may reach the age of 6 or 7 years with incorrectly articulated sounds in his speech, in spite of the fact that his hearing is normal. In most such cases the faulty sounds can be corrected with added ear training and aural stimulation as described in Chapter Three. Such procedures by themselves help very little, however, to correct misarticulations caused by a hearing loss. A child with an inner-ear impairment produces speech according to the way he hears it. If he listens intently while the teacher produces a sound he will still hear it incorrectly and will give back approximately what he hears. Consequently he must learn to imitate an acceptable sound by the way it looks on the teacher's mouth, by the approximate tongue position which he has learned from diagrams, and by the way it feels in his own mouth. For example, *f* and *v* sound very

much like unvoiced *th* and voiced *th*, respectively, but these pairs of sounds look entirely different. A child can usually learn to produce the *f* sound very quickly by being shown how it looks. He may even be shown how to press his lower lip against the free edge of his upper front teeth in order to produce it. To add voice for the *v* is a simple matter if the child is asked to place his fingers lightly on the teacher's or clinician's thyroid cartilage (Adam's apple) as she makes the sound. The unvoiced and voiced *th* can be taught in much the same way. The *t* and the *k*, the *d* and the *g* are hidden sounds, and therefore are very much more difficult to teach. With these pairs of sounds, simple diagrams similar to that in Figure 13 are often helpful in showing the relative positions the tongue should take in order to form the *t* and *k* and the *d* and *g* correctly.

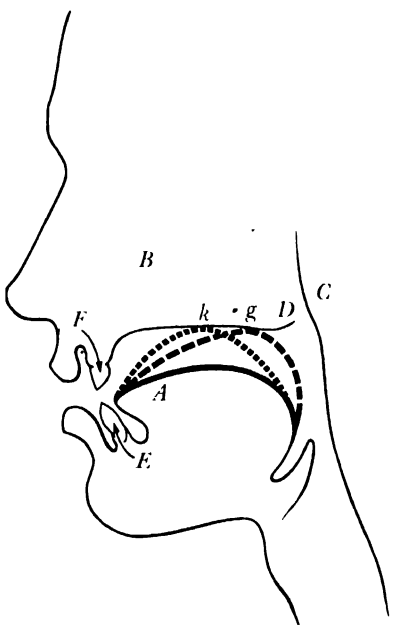


Figure 13. Cross section showing tongue positions (dashed lines) for *k* and *g*. *A*, tongue; *B*, nasal cavity; *C*, wall of throat; *D*, soft palate; *E*, lower front teeth; *F*, upper front teeth.

Sounds that the child with an inner-ear impairment frequently distorts or omits are *s*, *ch*, *sh*, and *j*. To learn to produce these sounds in spite of reduced hearing acuity for high frequency

sounds sometimes takes a lot of doing. One of the things that seems to help most is for the teacher to make the sound herself against the back of the child's hand, so that he is able to feel the contrast between them. The difference between *sh* and *ch* can frequently be taught rather quickly in this way, as you will realize when you make these two sounds close to the back of your hand. Such a technique makes use of cutaneous sensation as a partial substitute for hearing.

Thus far the discussion has been concerned with teaching the child to make the sounds. With a hard-of hearing child, even more than with a hearing child, this is just a beginning. After learning to make each sound, he must become accustomed to it (just as does the hearing youngster), but he must do it through feeling—rather than hearing—to a crucially greater extent than a normally hearing child does. As the child learns each sound, he must make it a part of his habitual speech pattern. This takes many hours of patient drill. Much of the remedial speech work that a child with normal hearing does is ear training, learning to recognize the sound when he hears it. After such training, he is constantly stimulated by the speech that he hears around him. The hard-of-hearing child receives little, if any, such stimulation because of the very nature of his problem. It is necessary, therefore, that he be given a greater than ordinary amount of drill in order to "fix" the sound.

Difficulty with articulation is frequently only one of the hard-of-hearing child's problems in his attempt to communicate verbally. In fact, it is one of the more minor problems of children with a severe hearing loss. A primary problem may be in building an adequate vocabulary. He may have difficulty with reading, for example, because he just hasn't "caught on to" what some of the words mean in hearing them used by the people around him. The ability to use them in speaking and writing will not come spontaneously. On intelligence tests that are based on language he is very often seriously penalized. The speech clinician or the classroom teacher working with a child with a sensorineural loss must be aware of the complexity of his speech and language problem and not confine remedial work to his misarticulations.

Another important problem is that of learning language. The

child with a moderate to severe loss of hearing may have no understanding of the accepted rules for the formation of plurals. This is generally true due to the high frequency sounds that make up the *s* and to its poor visibility. The same may be said for indicators of past tense and the indefinite articles, among others. The teaching of articulation skills to hard-of-hearing children is important, but they must also know the rules of the language if they are to communicate effectively. Children with normal hearing learn most of the rules more or less incidentally in daily living. For many hard-of-hearing children, the rules must be taught.

If the loss of hearing occurs after the child has completed the second grade (about 8 years of age), the chances are that he will have learned the rules of the language sufficiently to communicate adequately. The teacher should not assume, however, that the child no longer needs special help with language.

The main facts to be summarized at this point are these: In contrast to the child with a conductive impairment, the child with a sensorineural hearing loss has a much more complex speech and language problem. He may exhibit sound substitutions, distortions, and omissions in his speech. His voice may tend to be excessively loud, with a monotonous pitch pattern, and a muffled voice quality. His vocabulary may be significantly below that of his peers and he may have difficulty in constructing sentences. The chief methods to be used in correcting his speech are those which require the use of the visual, kinesthetic, and tactile senses as aids to such hearing as he may have. An awareness of his vocabulary needs can help immeasurably.

The deafened child If, after a child has become aware of language, he is stricken with a disease such as meningitis that destroys his hearing, we say he is "deafened." That is, he was not born deaf; rather, he has been deafened. It is a basic consideration that he had normal hearing while he was becoming aware of speech and language. If such a child loses his hearing while still comparatively young—that is, below roughly junior high school age—he may be placed in a special school for acoustically handicapped children to complete his education. An older child might better remain in his regular class, especially if he is of

normal mentality and school achievement. He should be able to make good progress if given reasonable consideration and help in speech and speech reading.

It must be realized in trying to understand such a child, that through no fault of his own he has suddenly been placed in a silent world. In all probability he never again will hear a bird sing or a friend whistle outside his window. He will never hear human speech again. You will find it difficult—or impossible—to imagine yourself in such a situation even for a day or for an hour —and remember, his will be a lifetime of silence. His adjustment to his drastically changed world is at best difficult. The teacher who attempts to help a child who has suddenly lost his hearing will need to have, above all else, an infinite amount of patience and understanding. In order to help him as much as possible, it will be essential to talk with his parents to see how they are accepting the problem—or what they are doing instead of accepting it. Sometimes, in trying to be kind, a parent will tell a child that the handicap is only temporary, that his hearing will return. If the nerve of hearing has been destroyed or seriously damaged (as is frequently the case when hearing is affected by meningitis, for example), the impairment is *permanent.* We can be most kind to a deafened child by helping him learn to live with his deafness from the beginning.

Such a child was little Jo. She was 4 at the time of her illness. The hearing loss, when first discovered, was about 35 dB in the speech range but became total within about a six-month period. She had better than average speech and language for her age and tested in the superior range on intelligence tests administered after her recovery. When it was discovered that she was losing her hearing, her parents were helped to work with her during their daily visits to the hospital. On her release, she came in every day for work in the hearing and speech clinic, where she had therapy aimed to preserve her speech and help in speech reading. In addition, she was taught to read as an added means of preserving and enhancing her language. The father and mother worked very closely with the clinic and learned to conduct themselves as constructive members of the problem. This child's speech and language, learned when her hearing was normal, were very superior to those of a deaf child of comparable age. It was there-

fore not appropriate that she be placed in a school for deaf children where at least the first two or three years are devoted to learning speech and language. She was placed in a regular first grade, more or less on an experimental basis, when she was 6 years old. She completed high school with normally hearing students and is now in college.

From the very beginning she fought the idea that her hearing would not return. The father and mother, however, accepted the situation quite well intellectually and gradually learned to accept it emotionally. She went through a period of antisocial behavior —which was probably her way of expressing the disturbing feelings growing out of her inability to understand why she could no longer hear. She still has periods of serious frustration but, considering the circumstances, she has made an excellent adjustment. To say that it has been accomplished without extreme difficulty, however, would be to underestimate the problem which the family and the school encountered in helping this very bright child with a sudden total loss in hearing.

SPEECH INSURANCE. As has been said, a deafened child is one who lost his hearing after he had become aware of speech and language. Thus the need for speech training in such a case may not be immediately evident. We all know that in order to *acquire* normal speech it is necessary to have hearing. We do not always consider, however, that in order to *maintain* normal speech it is also necessary to have hearing or adequate auditory feedback. This certainly does not mean that when a child loses his hearing he immediately loses his speech. It does mean, however, that in order to maintain reasonably intelligent and well modulated speech over a period of time he will need to learn to "monitor" it by the way it looks and feels rather than by the way it sounds.

During World War II many servicemen suddenly suffered losses in hearing. The speech training offered to them in Army and Navy rehabilitation programs was sometimes referred to as "speech insurance," a term very descriptive of the kind of help that it was—in a way, it did *insure* that the men taking such training would maintain reasonably intelligible and well-modulated speech in spite of the fact that they could no longer monitor it satisfactorily through auditory means. Speech insurance is difficult to teach and requires a considerable amount of determination and patience.

The speech specialist or, if one is not available, the classroom teacher can give the deafened child some practical assistance in the following ways:

1. It is very difficult for a child who has suddenly lost his hearing to know whether he is speaking at the appropriate loudness level for the class to hear. The classroom teacher can help him by suggesting that he yell with all his might in order to get the feel of an excessively loud voice. After yelling, it is to be suggested that he speak very, very softly in order to feel the contrast between the very loud and the very soft voice. Then he should speak at what seems to him to be a fairly normal loudness level between these two extremes. In order to achieve this final adjustment, he may need some special help from the clinician or teacher. If this procedure is repeated often enough over a sufficiently long period for the feel of various loudness levels to become familiar, the teacher will have helped the deafened child materially to keep the volume of his voice under control.

2. By somewhat the same sort of procedure, the deafened child can be taught to control the pitch of his voice. Sometimes the voice of the child with a severe hearing impairment will suddenly soar so high that it is extremely unpleasant. The speech specialist or the teacher can use much the same method to help the child to feel excessively high and low pitch levels as was used to help him feel loudness levels. Although the procedure takes time and painstaking effort, the resulting accomplishment is well worth the cost.

3. Speech sounds deteriorate rather slowly following loss of hearing, but over a period of time deterioration does take place. Many of the sibilant sounds, such as *s*, *ch*, and *j*, especially in the final position, seem to become distorted or omitted before some of the other sounds. If the clinician or the teacher repeatedly helps the child to pay attention to the feel of such a sound as he reads a passage in which it occurs several times, the child is more likely to retain the normal production of that sound in his habitual speech pattern. The basic objective is to sharpen the child's ability to monior his speech by kinesthetic rather than auditory feedback.

Many times a teacher must be a supersalesman to convince the deafened child of his need for speech insurance training. At the outset, the child can see no reason to suppose that his speech

won't remain just as it is, and he probably will not hear changes that others may be acutely aware of. Sometimes it takes a good many hours of patient explanation to show him that if he begins immediately, before any change has taken place, his total speech problem will tend to be much less difficult.

The deaf child When an audiologist or a teacher of the deaf speaks of a "deaf" child, he or she means a child who did not have sufficient hearing at the time he normally would be developing speech to be able to learn to speak through auditory means.[18] The child may have been born with a total or very severe hearing impairment or he may have lost his hearing during early infancy before he became aware of language. In either case the loss was so profound that he was not able to communicate in the normal way and so reached school age without the ability either to produce or to understand speech and language. Infrequently, a kindergarten or preprimary teacher may have a pupil with such a problem in her classroom. As far as the communication problem per se is concerned, she cannot do much about that. Teaching a deaf or severely hard-of-hearing child to use speech and language is the specialized job of a highly trained teacher. But in other ways the kindergarten teacher can be of tremendous help to the child. In the first place, she can help the parents to understand why the little boy or girl must have special education. She will remember from her courses in child development that the hearing child of 15 to 18 months, or even younger, begins to name the objects in his environment and to imitate expressions that he hears other children and adults around him use, with the result that he gradually accumulates a vocabulary of some 2,000 words by the time he reaches school age.[19] The child who is deaf is entering school with virtually no speech at all.

In a special school for deaf children, most of the child's time during the first two or even three years will be spent in acquiring skill in the use of speech and language and in learning to under-

[18] Irene Rosetta Ewing and A. W. G. Ewing, *Speech and the Deaf Child* (Manchester, England: Manchester University Press, 1954).

[19] Madorah Elizabeth Smith, *An Investigation of the Development of the Sentence and Extent of Vocabulary in Young Children* in *University of Iowa Studies in Child Welfare* (1926), *3*, no. 5.

stand what others say to him. The deaf child in a school for normally hearing children has little or no opportunity for such learning. And it is obvious that without language skill of even a rudimentary nature he will be greatly bewildered in a school situation. Many parents are able to accept a child's deafness on a verbal or intellectual level but continue to reject it emotionally. They somehow convince themselves that the child will be homesick if sent away to a special school, even that he will not be properly cared for, or that he will miss advantages they believe he would gain from association with children who hear and speak normally. Nor should we close our minds to the possibility that for *some* deaf children, under *some* teachers, in *some* schools, there might be *some* such advantages. Meanwhile, a major fact is that the parents of a deaf child may find it extremely hard to bring themselves to part with him. It is not unusual for them to bring him to the kindergarten teacher in the neighborhood school. She, they feel sure, is a kind person who will understand their problem and allow their little deaf child to sit in her classroom and get what he can out of what goes on. Eventually, they feel sure, he will somehow learn to communicate.

Not very long ago the case of a 28-year-old woman was brought to our attention. When she was a little girl, her father and mother had convinced the teacher of a rural school that he would be kind if he allowed her to learn what she could in his classroom for hearing children. At 28 she could not speak well enough to be understood, nor could she understand the speech of others. Neither did she have a manual means of communication that was understood outside her immediate family. She was able to read and write on little more than a primary level. But the saddest part of all was the fact that tests showed that she had normal intelligence and had had, as a small child, potentialities for becoming a functioning member of society if only she had been given the opportunities afforded by proper special education. As it was, she was forced to live out her life as a drudge. Perhaps the teacher of this rural school did not know of the existence of special schools for the deaf. But it behooves his modern counterpart to inform himself of the availability of appropriate special education and to help parents to understand it and accept it for their handicapped children.

Teachers and school administrators can be of great help to parents by keeping informed of the opportunities for the education of the deaf offered by the states and communities they serve. Information is available through the Volta Bureau, 1537 35th Street, N.W., Washington, D.C. 20007, concerning special schools for the deaf. Every state in the union makes some provision for deaf children, either through its own special school or by paying tuition fees to a neighboring state. Increasing numbers of town and city school districts are arranging for the special handling of deaf and severely hard-of-hearing children within their own schools. In some instances classes for children with impaired hearing are formed within a regular school for normally hearing children. Here the hearing-handicapped child receives the special help he needs and at the same time has the social stimulation of normally hearing children. In some large cities there are sufficient numbers of deaf children to make it seem best to establish separate special schools with programs especially designed for the acoustically handicapped. (Public School 47 in New York City and the Mary E. Bennett School in Los Angeles are examples of such schools.) There are also private and church-supported schools in various parts of the country, some serving day pupils and others that are primarily residential. Admission requirements, age limits, fees, and such, vary from school to school.

It is a wise and thoughtful teacher who will take the time and show the patience to help parents to understand how they can best educate their deaf child and who will refer them to the agency best suited to meet his needs. If the teacher passively allows the youngster just to sit in her classroom she is doing him irreparable harm.

SPEECH READING (LIP READING)

The hard-of-hearing or deafened child may or may not have difficulty in producing normal speech, but he is likely to have significant difficulty in understanding the speech of others. With help, he can learn to fill in the gaps through speech reading. About 1914, Edward B. Nitchie, one of the early teachers of "lip reading," defined it as the art of understanding a speaker's

thought by watching the movements of his lips, his face, and of his entire body[20]—and, it might be added, by paying due attention to the related activities and the total situation in which communication is being carried on. The term "speech reading," now in common use, describes what takes place much more accurately than does the older term, "lip reading."

In many school systems the speech clinicians also teach speech reading. In other schools there are special teachers of speech reading. But the actual practice that the hard-of-hearing child gets in learning to follow speech with the aid of the visual impression is gained in the regular classroom. The teacher can provide an atmosphere conducive to such practice if she will:

1. *Face the hard-of-hearing child.* She should give instructions, tell stories, and make suggestions or comments when she is within the line of vision of the child. If she addresses him when his back is turned—or when her back is turned, as when she is writing on the chalkboard—she will put him at a great disadvantage. The teacher can make the importance of this point clear to herself if the next time she is faced with the problem of trying to understand a person with an unfamiliar dialect, she cuts out the visual impression by closing her eyes or turning her back. She will find that the already difficult speech becomes even less intelligible. She will be putting herself in somewhat the position the hard-of-hearing child finds himself in when she speaks to him without properly facing him.

2. *Speak clearly but naturally.* It is assumed that any good teacher takes pride in having clear intelligible speech that can be understood by any child in any part of the classroom. Good speech makes speech reading easier for the hard-of-hearing child. The teacher's speech must not be exaggerated or markedly slow in rate. Like any other child, the hard-of-hearing youngster can understand best when he is spoken to in an easy relaxed way.

3. *Speak so that the light is shining on her face* rather than in the eyes of the child who is attempting to understand her. Poor lighting may not only be blinding to the hard-of-hearing child

[20] See Nitchie, *Lip-Reading Principles and Practice* (New York: Stokes, 1912); or the 1930 revised edition, same title and publisher, by Elizabeth Helm Nitchie and Gertrude Torrey, for information on early work in lip reading.

but also, in some cases, may produce shadows on the face of the speaker. Such shadows can distort the normal movements that the hard-of-hearing child identifies through speech reading.

4. *Repeat an instruction in the same words only once.* If the child doesn't understand the second time, the teacher should rephrase the instruction in different words. If, with rephrasing, he does understand, he has been helped to succeed, and that is very important. If the teacher in such a case were to go on to the next child with, "Oh, Bob, you do it—John doesn't understand," she would defeat John in such a way that the next time she asked him to do something not only his hearing loss but his sense of failure would prevent him from speech reading to the best of his ability.

5. *Speak expressively* by means of appropriate vocal inflections, gestures, bodily movements, and so forth. Speech that is highly expressive (as interpreted by pupils with normal hearing) is also correspondingly easy for the hard-of-hearing child to understand through speech reading and such hearing acuity as he possesses. Avoid violent gestures, however, or those including head and arm movements well away from the body. Such gestures serve to distract the attention of the speech reader from his basic point of focus—the face.

Speech reading techniques Frequently, in smaller communities no speech reading teacher is available. But there are nevertheless children in need of such instruction in villages and rural areas, as well as large cities. It is important, then, to make the most of the idea that simple speech reading instruction can sometimes be provided by the speech clinician, classroom teacher, or the parents. Speech reading is based on the fact that speech is learned and understood through hearing it, watching it, feeling it, and relating it to the whole situation in which it occurs. The average person whose hearing is unimpaired is scarcely aware of the visual and the kinesthetic and tactile senses (sensations arising from stimulation of sensory receptors in muscle and skin) in relation to speech. But when hearing acuity is reduced these nonauditory senses come into greater prominence in relation to speech reception. Speech reading instruction attempts to point up, particularly, the visual impressions of speech as a partial compensation for the hearing loss.

Spoken language is made up of a rapid succession of overlapping syllables that are in turn composed of some 40-odd sounds of varying degrees of visibility. The hard-of-hearing child who is attempting to follow speech with the help of speech reading must be able to recognize instantly all the visible movements and fill in, primarily through context, those that are invisible. Only about half of the sounds of English are visible; all the other sounds are hidden in the mouth or look like one or two other cognate sounds. For example, *p* and *b* sound different, but they look exactly alike. Ideas must be grasped in a fleeting instant; speech is never static. It is a constantly moving chain of syllables. No two mouths are alike, and no two individual speech patterns are identical.

To make practice in speech reading effective it is necessary to isolate and point up the visual stimuli, at least for a time. In the first stages of instruction auditory stimuli should be eliminated. The teacher must learn to speak without voice. She can train herself to speak in a natural way without voice by practicing in front of a mirror until her speech has a normal feel as well as a normal look. Some authorities advocate the use of voice soft enough to be below the level of the hearing of the children with whom the teacher is working. This can be a satisfactory approach if the teacher is willing to try different levels of loudness in each speech reading practice period. This is necessary because in some cases hearing acuity tends to fluctuate, the noise level in the same room varies from time to time, and the children may not always be at the same distance from the teacher.

The second important consideration as far as the teacher's speech is concerned is that she should always speak with what is, for her, a normal amount of lip movement and at a normal rate of speed. The hard-of-hearing child, when he leaves the classroom, will need to communicate with the grocer, the baker, and the bookseller, as well as with other teachers and his friends and classmates. If he learns in his speech reading practice periods to understand speech that is not exaggerated or abnormally slow in rate, he will be able to communicate with much greater ease with the people with whom he comes in daily contact.

The speech reading process will be something completely foreign to most children when they begin to use it. Consequently

it is usually a good idea to start with very familiar material, such as:

1. *Colloquial expressions:* Hello! How are you? What time is it? Is it cold? etc.
2. *Nursery rhymes:* "Jack and Jill," "Peter, Peter, Pumpkin Eater," "Sing a Song of Sixpence," "Little Miss Muffet," "Little Jack Horner," etc.
3. *Familiar categories:* The days of the week; the months of the year; the alphabet; numbers by ones, twos, fives, tens, etc.

Frequently a child will be very much surprised when he realizes, for the first time, that he has understood something that was said, even though he didn't hear it. After the child—or children, if the teacher is working with a group—gains some facility in speech reading familiar material, new vocabularies for practice may be grouped in a variety of ways. For example, the first such lesson might be built around animals. In order to add interest, pictures of a cat, dog, horse, cow, elephant, lion, tiger, or other animals might be used. Ten or 12 pictures are enough to start with. The lesson might follow some such procedure as this:

1. Arrange the group of pictures on the table.
2. Point to each picture, say the word (without voice), and have the child repeat it.
3. Repeat each word again, this time without oral repetition by the child.
4. Skip around, saying the names of the pictures in random order, having the child identify them. Avoid too much repetition of this step. Speech seldom occurs in single words, but rather in phrases and sentences.
5. Put the names of the animals in such carrier sentences as: Point to the. . . . Give me the. . . . Where is the . . . ?
6. Devise an interesting sentence for each word pictured. Say it and have the child tell you what was said.
7. Remove the clue words (or pictures) and present a second group of sentences.
8. Tell a short story about one of the animals in the day's lesson. Have the child tell the story or repeat the gist of it.

An informal speech reading lesson comparable to the one just described should take from 20 to 30 minutes; for a child it

should seldom be any longer—his eyes get tired, and his attention wanders. He is not only hard-of-hearing, which makes for a certain amount of strain in trying to understand speech, but he is still a child, with a comparatively short attention span. The animal lesson is meant to be merely suggestive. Other categories such as fruits, vegetables, birds, or flowers might be used just as well. The steps in the procedure given in the animal lesson are by no means hard and fast. There should be some kind of progression from the simple familiar picture to the more complex use of the word in sentences and stories. With older children in junior and senior high school the vocabulary can be presented in written rather than picture form.

Another type of lesson that is easily developed is built around a common everyday experience such as a bus trip, the purchase of stamps at the post office, buying groceries, or an expedition to the zoo or art museum. Following is such a lesson built around the post office:

1. Where is the post office?
2. It is across the street from the bank.
3. It is a block south of here on the same street.
4. What time does the post office open?
5. It opens at half past eight, or at eight-thirty.
6. What time does the post office close?
7. It closes at five o'clock.
8. Did you want some stamps?
9. I'd like six fives, three fours, and four ones.
10. Will this letter go faster by air mail?
11. How much is an air-mail stamp?
12. I'd like to send this letter air mail, special delivery.
13. That will cost 38 cents.
14. Will it go out this afternoon?
15. Yes, it will go out at three-thirty.

This situation type of lesson can be handled in a number of ways. One approach might include taking the children to the post office or the grocery store. On returning, the teacher and the children might write the lesson cooperatively, including as much of the specific vocabulary common to that experience as possible. The teacher might then read the sentences one at a time and ask the children to repeat what she says; or she might ask them ques-

tions about the place they have visited and have them give appropriate answers. The lesson could be presented without the actual experience, but it does add interest.

A slightly more difficult type of lesson might make use of a short story, preferably one that employs a good bit of repetition in the telling. Examples are James Thurber's "Many Many Moons" and the old tale about the goose that laid the golden egg. Such material must be condensed and cut enough so that it does not require an excessive amount of time to tell. Sometimes children become a little fearful about their ability to follow a full story when the teacher tells one for the first time. In order to dispel any such feelings, a simple outline is sometimes put on the chalkboard to show the sequence of events. When the individual or group seems to be having trouble following, it is sometimes a good idea to divide a story into sections. The teacher might tell the first section, then ask questions bringing out the main points, and so on with each part of the story. Then it is a good idea to go back and retell the whole thing from the beginning. One must be careful at first not to choose a story that is too long.

At the beginning of the discussion on speech reading, it was suggested that voiceless speech be used in beginning practice periods with a hard-of-hearing child in order to emphasize or point up the visual stimuli. When the child has progressed to a point where he is able to read voiceless speech with some degree of ease, he should be given practice in reading speech that he can partially hear as well as see. This last step is very important because in life situations he will usually have the help of hearing when he attempts to follow conversation.

In city school systems, a number of studies have been done which serve to point up—rather dramatically in some instances—the tremendous help to be found for hard-of-hearing children in well-organized classes for speech reading instruction. In some cases school failures have been cut as much as 50 percent. With the advent of smaller and more efficient hearing aids, there has been a trend toward eliminating speech reading instruction in some school systems as being no longer as necessary as it was before miniaturized aids were available. Such a trend should be discouraged. Some children receive little, if any, help from use

of a hearing aid, for instance, a child with an abrupt, high-tone loss. Other children with severe hearing problems, such as a 15-year-old boy seen by the writer recently, are benefited by hearing aids but still must rely to a large extent on speech reading for communication. The boy in question had a loss that had been progressive for several years; when we saw him, his speech reception threshold was about 85 dB. With a hearing aid his threshold was brought up to approximately 45 dB. For him, speech reading instruction could supplement the help he received from the hearing aid. And there are always children with borderline losses—that is, losses of 20 to 25 dB—who with the help of speech reading instruction can get along in a normal classroom without difficulty, but who, without some special help, will be among those who fail repeatedly because they do not understand classroom instructions.

HEARING AIDS IN THE CLASSROOM

Many hard-of-hearing children are fitted with hearing aids so that they may continue their school work in the regular classroom rather than in a special school for acoustically handicapped children. The alert classroom teacher will want to know how she can help a child get the most from his hearing device.

The amount of help different individuals get from hearing aids varies considerably, depending on the extent and type of the hearing loss, plus a good many personal factors that sometimes seem to be as varied as the persons wearing hearing aids At best, a hearing aid is a compensatory device. It is not a substitute for normal hearing and, speaking realistically, there are inconveniences involved which must be considered: batteries have a way of wearing out at inopportune times; cords wear through where they attach to the earpiece or the amplifier case; in some instances, the instrument must be taken off if a child wants to join in group games on the playground. But if the youngster and his teacher learn to anticipate such problems and to accept them, an appropriately placed hearing aid can be a great help rather than a nuisance to be tolerated.

Frequently, when a hearing aid is suggested as part of a plan for the rehabilitation of a child with a hearing problem, the

parents are concerned about other children's curiosity.[21] This can ordinarily be handled by the teacher's asking the hard-of-hearing child to explain the instrument to the children in the class, show it to them, describe how it works, and state briefly why he is going to wear it. It also might be well to give each member of the class an opportunity to put it on and try it for himself. Children have little reason to be curious about something they know. By the same token, the hard-of-hearing child himself tends to gain a more thorough acceptance of the instrument by talking freely about it with his classmates.

When a youngster is first fitted with a hearing aid, he may not be able to wear it during a full school day. He may need to accustom himself gradually to the earpiece and to the added volume of sound. If he wears the aid for a while in the morning and perhaps a little longer in the afternoon during the first few days, gradually the time may be increased until the aid is worn during a full school day. An occasional child will be so eager to hear what is going on around him that he will put on the aid the day he first gets it, and take it off only when he goes to sleep.

Hard-of-hearing people often report that the average person meeting someone wearing a hearing aid instinctively raises his voice. The vocal result of this splendid but misguided impulse to be helpful is sometimes so loud that it is painful to the listener. The classroom teacher can prevent this sort of thing from happening, at least in her own classroom, by explaining to her pupils that when John wears his hearing aid, it amplifies their voices, making it possible for them to speak to John just as they would to anyone else. It is helpful if they try to speak to John when he is facing them, not when his back is turned.

It is the rare child who can put on a hearing aid and enjoy it from the beginning without a period of adjustment. Whether that period is long or short will depend on many factors. Probably the first and most important is the attitude of the child and his parents when he first puts on the instrument. His age is another factor, of course, as are also the duration and extent of the hearing loss.

If a child has a conductive problem without inner-ear involve-

[21] Eleanor C. Ronnei and Joan Porter, *Tim and His Hearing Aid* (Washington, D.C.: Alexander Graham Bell Association for the Deaf, 1951).

ment, learning to wear the hearing aid is a matter of becoming accustomed to the instrument itself and the added loudness that it provides. But if the impairment is a sensorineural one, in order to benefit most from amplication, the child should have some training in learning to listen or in what is frequently called "auditory training."[22] Each day he should be given systematic exercises in learning to distinguish differences among gross sounds, then meaningful sounds of nature, and so on through a series of training experiences until he is listening to conversational speech with a background of noise. Auditory training is usually presented by a clinician who has been specially trained in speech and hearing, but much help can be given by the classroom teacher who realizes that a child with a new hearing aid is likely to need a period of adjustment before his aid can be of maximum benefit to him and who is, therefore, patient in her dealings with him.

Not every hard of hearing child can benefit from amplification. It is extremely important, therefore, that before parents are urged to provide an instrument for a child they be referred to a speech and hearing center, where the situation can be thoroughly evaluated. There the child's hearing for speech will be tested first without an instrument and then with one. Various types will be tried to determine which aid, if any, best gives the child the help that he needs.

A hearing aid probably is never an unmixed blessing. But when it is appropriately selected and when the child is properly helped to use it, it can mean, among many other things, the difference between his remaining in the regular classroom or being enrolled in a special class for acoustically handicapped children.

CONCLUSION

The writer of this chapter has been a public school speech clinician, a university instructor, and for many years director of a hearing and speech clinic in a large metropolitan hospital for children. As a result of that experience, it is her firm belief that most classroom teachers are ready and willing to help any child

22 Alice Streng, *et al., Hearing Therapy for Children,* 2nd. ed. (New York: Grune and Stratton, 1958).

with an unusual problem if they know how to do it. In this chapter we first introduced some of the broad concepts concerning the nature of hearing by (1) describing some of the properties of sound, (2) discussing the anatomy of the ear, and (3) describing the degrees and types of hearing loss. After giving the teacher something of a frame of reference in these first three sections, we went on to (4) outline general classroom procedures for children with hearing problems, (5) discuss the speech imperfections that result from impaired hearing and techniques for their correction, and (6) describe compensatory measures such as speech reading and hearing aids that may be helpful to acoustically-handicapped children.

If she can find the necessary time, the teacher will discover that the techniques described in this chapter are as simple as most of the other teaching methods she uses day in and day out with no thought of their "complexity." Much of what is to be done for a child with a hearing handicap takes no time at all. It requires a kind of attitude—and enough information of the sort presented here to enable the teacher to make the attitude work effectively in her moment-to-moment handling of classroom activities. It should be realized, of course, that everything said in Chapter Two applies in this context with full force.

Occasionally a principal or superintendent will adjust the teaching load to make it possible for the classroom teacher to work more fully and effectively with the speech clinician or speech reading instructor or audiologist or to use more of her time to do more herself for pupils in her classroom who have hearing problems. If she is sufficiently interested she will somehow find a way, and she will be richly rewarded.

NINE



THE PUBLIC SCHOOL REMEDIAL SPEECH PROGRAM

In this final chapter we shall explore the ways in which remedial speech services are carried on in the public school situation. We shall be focusing our attention on the public schools because it is there that most of the speech therapy work in this country is done; we shall be aware, however, that in general the discussion applies to other remedial speech programs as well, for example, those in private and parochial school systems, in hospital, university, service league, and community clinics.[1] We shall be speaking to all who are interested in helping children with

[1] For official statements on the duties and responsibilities of speech clinicians in public schools, see American Speech and Hearing Association Committee reports entitled "Services and Functions of Speech and Hearing Specialists in Public Schools," *Asha* (1962), *4*:99–100, and "The Speech Clinician's Role in the Public School," *Asha* (1964), *6*:189–191.

speech problems—not only to the speech clinician and the classroom teacher and to those now training for those professions, but also to school superintendents and principals and supervisors, to school psychologists and social workers, to medical doctors and school nurses, and, in a very special way, to parents.

Ever since the first speech correction program was established in a public school in New York in 1908, followed soon thereafter by others in the schools of Detroit, Chicago, and Boston, these programs have increased in number.[2] The growth was slow and steady until about 1940, when the increase rate accelerated noticeably, and, since the early 1950s, there has been a matching acceleration in efforts to raise standards of preparation and certification of speech clinicians working in the public schools. Today the state department of education with no certification requirement for speech clinicians is rare indeed.

There is still, however, considerable variation in programs from state to state and from community to community, for, as might be expected, the problems of staffing and understanding and cooperation that have been associated with the growth of the total special education program have been shared by programs in speech correction.[3] We have looked at these problems in a general way in Chapters One and Two and we have surveyed various kinds of speech handicaps in the intervening chapters. Therefore, we may well turn now to the consideration of representative programs, not only to place these various kinds of information in context, but also to provide ourselves with guidelines for the evaluation of existing and projected programs.

We shall proceed on the assumption that we have adopted the clinical point of view of education (Chapter Two) and that we consider ourselves members of the problems of the speech handicapped children with whom we shall be concerned (Chapter One). We shall be aware, therefore, that attention is to be given to the many forces that play upon the child, not only those

2 See *Public School Speech and Hearing Services*, monograph 8, *Journal of Speech and Hearing Disorders* (1961); Harold H. Haines, "Trends in Public School Speech Therapy," *Asha* (1965), 7:187–190; and Dorothy Anne Eckelmann, "A Handbook of Public School Speech Correction," unpublished Ph.D. dissertation (University of Iowa, 1952).

3 See Romaine P. Mackie, "Education of Exceptional Children: Program, Progress, Problems," *School Life* (July 1962), 44:10–12.

forces that are causally related to his speech problem but also those that produce an environment unfriendly to his improvement.

THE PUBLIC SCHOOL SYSTEM

Although there is some variation in the administrative organization of public school systems from city to city and state to state,[4] in general the control of the local school system is vested in an elected school board. The board employs a superintendent, who serves as chief administrative officer of the school system. He, in consultation with the board, employs a principal for each school. The superintendent and the principal, again in consultation with the school board, employ classroom teachers and other personnel. The line of authority and responsibility runs, then, from teacher to principal to superintendent to school board. In large city or county school systems, the superintendent frequently attaches to his office certain assistants and supervisors who have duties related to specialized instruction. An assistant superintendent in charge of special services would direct the work of supervisors of programs in health, hearing conservation, remedial reading, speech correction, and so forth. Frequently, then, the speech clinician is directly responsible to a supervisor, and he, in turn, to an assistant superintendent, and he, in turn, to the superintendent. The itinerant speech clinician—that is, the clinician who works in more than one school—thus has a responsibility both to the principal of a particular school and to the supervisor who is in charge of the total remedial speech program.

State departments of public instruction play varying roles in special education. One function of all state departments is, of course, the certification of teachers. To be certified to teach in public schools, the speech clinician (like any other teacher) must take certain specified college courses in education in addition to courses in speech correction. Certification requirements not only vary somewhat from state to state, as was mentioned earlier, but

[4] See *Public School Speech and Hearing Services, op. cit.;* also Alan C. Nichols, "Allocation of Time in the Articulation Program: Applications of Research," *Asha* (1964), *6*:8–12; and Gerald G. Freeman, "County Speech Services: A Clinical Program in the Public Schools," *Asha* (1961), *3*:46–47.

also change somewhat from time to time. The only authoritative source of information about certification in any particular state is the department of public instruction of that state.[5]

Some state departments subsidize and supervise programs of special education in the schools. In Florida, under the Minimum Foundation School Program, any county may apply for one or more units (teachers) in special education; minimum salaries for these units are paid by the state. The various counties may supplement these salaries out of local funds. The program is administered through a Division of Special Education. Somewhat similar plans are in operation in Illinois and Minnesota, as well as in many other states. In Iowa, the Division of Special Education, which is part of the branch of Pupil Personnel Services of the State Department of Public Instruction, provides leadership in maintaining and raising minimum standards, employs professional speech and hearing consultants who are available to the state's school systems, and makes a contribution to the salaries of certain local administrative and professional supervisors of speech and hearing personnel. The state of Iowa also provides a substantial reimbursement to counties and city systems on the salaries paid to speech clinicians who work with children in the public schools. The Florida Crippled Children's Commission conducts clinics throughout the state for children suffering from cerebral palsy. On the teams that conduct these clinics are a speech clinician, a pediatrician, a clinical psychologist, an orthopedic surgeon, and a physical therapist. There are similar services and agencies in other states.

In order to obtain current information about the care and education of handicapped children in a particular state, it is best to direct inquiries to the department of public instruction. The

[5] For discussions of certification requirements see Haines, *op. cit.;* Ruth Beckey Irwin, Charles Van Riper, Margaret R. Breakey, and Ruth FitzSimons, "Professional Standards and Training," *Public School Speech and Hearing Services, op. cit.*, pp. 93–104; Elizabeth W. Reeves, "Current Practices and Trends in Speech Correction Certification," *Journal of Speech and Hearing Disorders* (1959), *24*:7–15; and Irwin, "Speech Therapy in the Public Schools: State Legislation and Certification," *ibid.*, pp. 127–143. Certification requirements of the American Speech and Hearing Association are carried in that organization's current annual directory. See also Mackie and Lloyd M. Dunn, *State Certification Requirements for Teachers of Exceptional Children*, bulletin 1 (Washington, D.C.: Office of Education, U.S. Department of Health, Education, and Welfare, 1954).

department can furnish information about the public schools and, as a rule, will know of the other state agencies or commissions that work with children. It is to the advantage of all who work with speech handicapped children to be familiar with the programs of these agencies so that plans can be made to include them and so that their services can be used as appropriate.

TYPES OF PROGRAMS

In today's public school program in oral communication, the most highly developed aspect of speech services is speech correction, although in some public school systems we find, as well, thriving programs of speech improvement.[6] In the main, there are six types of programs. A given community may have one or more of these or may have developed some sort of combination.

Programs in schools for exceptional children In some cities there are schools (part of the public system) that are equipped and staffed to take care of those exceptional children who would have difficulty following the average school routine. Such schools usually include speech therapy as one of their services.

Itinerant speech clinician programs In many systems, remedial speech work is in charge of a speech clinician who serves more than one school—usually from three to six. She has a home office in one of the schools and works in the various schools according to a schedule she develops with the various teachers. One of her great challenges is to become a member of the teaching group in each school.

Single school speech clinician programs In some cases the speech correction program is in charge of a clinician who is assigned to a single school. Since her work is in only one building, her scheduling problems may be simpler than those of the itinerant clinician, but she still needs to meet the challenge of becoming a member of the teaching group.

[6] See "Speech Improvement and Speech Therapy in the Elementary School," a compilation of two Seattle school bulletins, *Asha* (1963), 5:548–549.

Combined speech correction and speech improvement programs Some administrators and supervisors like to make use of teachers who not only can handle remedial speech instruction but who also can direct classroom activity aimed at speech improvement. These administrators reason that it is difficult to determine where the need for correction ends and the need for improvement begins; they are concerned about the need of every pupil to improve in the skills that enter into oral communication.

Classroom teacher programs In some school systems the classroom teacher conducts the only remedial speech program that is available. In others, where a speech clinician is employed, she supplements the clinician's program.

Special programs for rural areas The program directed by the itinerant clinician or the classroom teacher can be used in sparsely settled rural areas; however, other types of service programs have developed in some of these regions. One of these is the mobile speech and hearing clinic conducted at certain chosen centers where surrounding schools send their pupils for examination. To aid those children who show speech handicaps, the speech and hearing clinicians in charge of the clinic provide parents and teachers with reports, long-term recommendations, and suggestions for current speech training.[7] Another type of speech and hearing service for rural areas is the statewide demonstration program in which diagnostic clinics and remedial classes are held weekly or at other stated intervals in strategically located cities, each accessible to a wide area. Teachers and parents accompany the children to these clinics and classes and usually are given instructions on school programs. A third type of program for sparsely settled areas is the summer residence center. Here the children live and receive intensive instruction for a given period, ordinarily from two to eight weeks.[8]

[7] An interesting program of this kind in North Dakota is described in an anonymous article, "Mobile Speech and Hearing Clinic in North Dakota," in the August, 1949, issue of *Hearing News*.

[8] A program of this kind in Vermont has been described by Harriet M. Dunn in "A Speech and Hearing Program for Children in a Rural Area," *Journal of Speech and Hearing Disorders* (1949), *14*:166–170.

An ideal program An ideal speech program in the public schools would offer help to the child and his parents when it is most needed. It would provide all children with the advantages of instruction in oral communication. It would reduce the pupil load of the speech clinician to a level at which meaningful and productive work would be possible.[9]

This program would have three facets. The first would be a prevention-correction program for the child below school age which, through instruction of parents, would promote development of oral-aural skill in the child before he enters school. In addition it would offer remedial help to children who, because of organic or other deficiency, would profit from the earliest possible attention.

The second facet would be concerned with classroom speaking and listening improvement and would be handled by classroom teachers with the support and assistance of speech clinicians. It would be designed to correct minor deficiencies in speech, to compensate for minor handicaps in hearing, and to emphasize skill in oral communication.

The third facet would be a program for those children who require specialized help that cannot be offered by the classroom teacher and who can make little progress in overcoming their problems while working with a large classroom group. This is the typical remedial speech program now offered in most public schools. It would be unencumbered by minor problems of speech that would be handled by the classroom teacher. Except where there were complicating factors such as physical or mental handicaps, it would allow the processes of maturation and learning to have their normal effect on articulation in children below the age of 8. The clinician would then be able to devote more time to those children who most need help.

All three facets of the general program would be part of a continuous, carefully planned, carefully coordinated effort that would stretch almost from the child's birth through his public

[9] For an explanation of how such a program might be established and carried out, see Geraldine Garrison, Frederic L. Darley, Hilda F. Amidon, and Verna A. Breinholt, "Speech Improvement," in *Public School Speech and Hearing Services, op. cit.*, pp. 78–92. See also Betty Ann Wilson, "The Development and Evaluation of a Speech Improvement Program for Kindergarten Children," *Journal of Speech and Hearing Disorders* (1954), *19*:4–13.

school years. It would be, at heart, a team approach and would involve in a very direct way every member of the problem.

THE TEAM

Before we go into the detail of the speech program in the public school we would do well to consider just what and who are involved in the team approach to speech therapy. This will give us our context for the plans we make and the work we do.

The moving forces that play upon a child and affect the quantity and quality of his speech are many and diverse. Among these are his readiness to learn; his relationships with his parents and teachers and playmates; his relationship with his clinician; his physical and mental health; his feelings of confidence, success, security, independence. Consequently, there is sometimes a need for psychological counseling, physical therapy, occupational therapy, educational guidance, group participation, vocational guidance, or rehabilitation, and, let us not forget, inspiring, easy, appreciative friendships.

All this adds up to the fact that no one individual can do the job alone. Speech reeducation requires the effort of a team, and teamwork.[10] And here, then, we have our team—the child, the speech clinician, the parents, classroom teachers, social welfare workers, doctors, dentists, nurses, psychologists, physical therapists, occupational therapists, group leaders, vocational and educational counselors—not to mention those many other people who are sufficiently interested in handicapped children to develop and administer programs for the training of teachers, seek legislation, coordinate activities, disseminate information, obtain contributions, and provide money and facilities for essential services. Naturally the team will differ from instance to instance in both size and composition. In some instances the team will be composed of only the child and the clinician or only the child and the classroom teacher or, though rarely, only the child and the parents. In other instances the team may include all or most of the kinds of individuals we have mentioned.

On occasion the team or several members of it will come to-

[10] See Jon Eisenson and Mardel Ogilvie, *Speech Correction in the Schools*, 2nd ed. (New York: Macmillan, 1963), 26–37.

gether formally for what is called a staff conference.[11] More often, however, the team will function somewhat less formally and on a continuing basis as each member contributes in his own way to the solution of the problem.

In the following pages, before we proceed to a consideration of the structure of the speech correction program in the public school, we shall examine the role of each member of the team. We shall begin with the child, who is the central figure, and we shall end with the speech clinician, whose professional activities can provide much of the coordination and sense of direction necessary for team effectivenes.

The child The child, as the central member of the problem, becomes all-important to every person interested in his progress. He may be said to be "ready" for instruction in speech when he is motivated to engage in the task, assuming, of course, that he is sufficiently mature—mentally, physically, and socially—to profit from instruction. The judgment of when he is ready is often difficult to make because motivation itself is very complex. It involves not only "how behavior gets started, is energized, is sustained, is directed, is stopped," but also "what kind of subjective reaction is present in the organism while all this is going on."[12] Sensitivity, experience, and a good psychology text will be found useful guides in making such a judgment.

INTERESTS. Generally speaking, the elementary school child will be interested in the following: playing with other children; outdoor playing with ponies and pets; experiencing nature, observing its beauties, and using it for recreational purposes; enjoying relatively peaceful environments; visiting the farm; having an opportunity to grow things; going somewhere; seeing new things; meeting new people; getting new things; riding on buses and tractors; having a party; having visitors; swimming, wading, fishing; playing tennis, golf, baseball (boys); shopping, especially in dime stores; wearing and talking about "cute"

[11] See staff conference report by Herbert K. Lotz in Martha E. Black, *Speech Correction in the Schools* (Englewood Cliffs, N.J.: Prentice-Hall, 1964), pp. 58–61.

[12] M. R. Jones, ed., "Nebraska Symposium on Motivation," as cited by John W. Atkinson in *An Introduction to Motivation* (Princeton: Van Nostrand, 1964), p. 1.

clothes (girls); attending church and Sunday school; going to resorts; having nice things in the home; seeing big houses; watching television; going to movies; talking about mothers and fathers and grandparents; being with and doing things with parents.[13] Such interests provide a starting point in plans for remedial work.

LEVEL OF SKILL AND LEARNING. Remedial speech work should always be initiated at the level of skill and learning the child brings with him. Very frequently, before he can do anything about his specific speech or hearing handicap, he must have preliminary training in muscular coordination or relaxation, personal adjustment, language usage, or other skills and understandings.

MATURATION. The child begins to talk, and to talk reasonably well, when he is old enough, assuming that his physical-mental-environmental condition is relatively "normal." Therefore, it is well to remember the pattern of development, age by age, for the various aspects of speech and hearing. It is well to remember, too, however, that quite normal children often do not exactly fit this pattern; in other words, the timing of expectations and the concentration of instruction should be kept flexible.[14] Premature remedial work may, at best, produce only temporary improvement, and, at worst, create anxiety and frustration. Learning is enhanced when the child becomes an active partner in the process we could call learning-teaching.

Classroom teachers Fortunately, many classroom teachers have felt the need to know something about speech handicaps and, in the process of professional preparation for teaching, have taken one or more courses dealing with speech disorders. In some states, teachers are required to take courses in speech correction before they can become certified. Some training institutions expect student teachers to take courses of this kind. Many teachers (whether or not they have taken special course work) have a heightened awareness of speech problems simply because the

[13] An analytical description of the interests, likes, and dislikes of elementary school children may be found in Frank J. Estvan and Elizabeth W. Estvan, *The Child's World: His Social Perception* (New York: Putnam, 1959).

[14] For norms in the development of speech see "Testing Articulation" in Wendell Johnson, Frederic L. Darley, and D. C. Spriestersbach, *Diagnostic Methods in Speech Pathology* (New York: Harper & Row, 1963), pp. 80–110.

growth of special education has focused their attention on the importance of speech. Indeed, as was pointed out in an earlier chapter, most classroom teachers teach speech, whether wittingly or unwittingly, in the course of teaching other things.

Classroom teachers who include speech correction in their plans ordinarily use one or a combination of three procedures which can be adapted to any variation in curricular organization or to any variety of instructional approach. The first is the *daily speech period* plan in which a period is set aside daily for concentration upon the skills of speech. The second is the *adaptive instruction* plan in which remedial lessons are dovetailed with study and activity periods during which other children can handle themselves with a minimum of direction. The third is the *free-time* plan under which the teacher takes advantage of breaks in the day's schedule to conduct remedial lessons. It is of the utmost importance that, regardless of the plan used, the child must not feel penalized by being included in the speech work. If he does, then it's better to forget the speech lesson.

The enterprising teacher will find within her daily schedules many opportunities to conduct brief individual and group remedial lessons. These lessons should occur regularly, on a continuing basis, and be closely integrated with and supplemented by other classroom work.

There are many things that the classroom teacher can do and will want to do as a member of the team that seeks to correct and improve the oral communication abilities of children. In the first place, whether or not she is trained to teach speech, she will want to utilize the "common denominator" principles which were discussed in Chapter Two. If she does so, her classroom will be characterized by conditions that reduce rather than exaggerate speech difficulties. A free, spontaneous atmosphere will prevail; tension, if it exists at all, will be dispelled by a friendly remark, an interesting exercise, a bit of humor. Hesitancy to speak will disappear under the magic of the teacher's smile. Subtle encouragement will draw individuals into oral activities; once in, they will experience teacher approval. The teacher will be alert, poised, confident; she will guide young friends, by plans rather than penalties, into exciting oral experiences. Class-

room citizens will be so accustomed to speaking that even the visiting parent will not inhibit contributions to classroom discussion. Pupils and teacher will live together in cooperative harmony. Students will enjoy successes; participation will bring rewarding experiences; standards will be high, but not too high.

The classroom teacher, with a minimum of training in speech, can significantly improve the articulation of her pupils by providing short daily classroom lessons in the production of sounds for which the children are ready.[15] This contribution looms large in the remedial speech picture since 80 percent of the speech handicaps of school children are errors in articulation. The classroom teacher also can work to correct minor deviations in voice and articulation and significantly improve oral communication ability by incorporating speech training into oral activity in the classroom. Every day, throughout the day, pupils normally engage in speaking-listening activities which can be used as vehicles for speech-hearing correction and improvement. The matter of who initiates what will depend on whether or not the school system employs a speech clinician. When there is a clinician, the classroom teacher will be working with the clinician in organizing a program and in working out lesson plans. In some school systems, the clinicians conduct a continuing program of in-service training for classroom teachers.

When there is a clinician in the system, the classroom teacher can sit in on and contribute to diagnostic conferences. She can be helpful in many other ways, too. She can, for example, suggest ways in which the remedial speech program can be coordinated with the curricular program; she can provide information about a particular child that may have some significant bearing upon his handicap; she can relay word about new pupils who appear to have speech or hearing problems; but, above all, she can encourage the child in his efforts to overcome his handicap. direction or another, and in varying degrees, in the development

The parents Throughout this book, we have seen evidence accumulating to indicate that parents are a major force in one

[15] See "The Development and Evaluation of a Speech Improvement Program for Kindergarten Children," *op. cit.;* Ronald K. Sommers, *et al.,* "Effects of Speech Therapy and Speech Improvement upon Articulation and Reading," *Journal of Speech and Hearing Disorders* (1961), 26:27–38.

of oral communication skill in their child. Good speech in the child definitely is associated with the parents' reasonable effort to provide him with appropriate speech stimulation and language training in an atmosphere of encouragement, acceptance, realistic standards, and reasonable restrictions. As has been pointed out, speech disorders in the child often are related causally to personality characteristics and attitudes of parents, such as psychological immaturity, social maladjustment, excessively high standards, lack of understanding, inconsistent disciplinary procedures, rejection, and overprotection. Often there is a synergistic effect in the operation of these factors.

Parents often are key people on the speech correction team. They can become important associates of the clinician in the therapy program when they are enthusiastic about the help the child is receiving. Such enthusiasm may depend in large measure on their understanding of the speech problem itself and of the purpose and plan of therapy. That understanding, in turn, develops not only from information on the specifics about a certain speech handicap but also, and perhaps more importantly, from an appreciation of the fact that most speech problems are simply problems of behavior in perfectly normal children. It should be remembered that many parents, like many other adults in this civilization, still cling to the idea that a speech disorder is a sign that something is wrong with the individual. In those few cases where there is a physical or mental problem, the parents should know, but in the rest, they need assurance that no such complicating factors are present.

Perhaps because normal speech is so effortless that one hardly gives it a thought, people in general are inadequately informed about speech development, speech disorders, and speech correction. Parents are people who share this inadequacy in most meaningful ways. Therefore, the contact with parents and the subsequent work with them, whether by the speech clinician or the classroom teacher, is to be undertaken with clear awareness of that inadequacy.

Parents may not recognize the increasing importance of skill in oral communication in a society that has developed the telephone, radio, tape recorder, television, and intercontinental conversations by satellite relay. They may not be aware of the im-

portance of good speech habits in many occupations or of the undesirable effects speech disorders may have on personal adjustment.

MEETING WITH PARENTS. Conferences with the mother or the father or both (sometimes held with the parents of one child but more often with parents of three or four) are useful in developing the rapport and understanding upon which successful therapy programs are based. These conferences may be structured to use the direct or the indirect approach. There are, of course, some instances in which parents are very distraught and in which, therefore, psychological help is indicated.

The direct approach is useful with parents who are well-adjusted and who therefore want to know clearly and specifically the nature of the child's problem, the possible causes of it, and what can be done to help. These matters are explained in a straightforward, matter-of-fact way. If it then seems necessary, the parents are told what they perhaps unconsciously are communicating to the child, how to interpret the child's behaviors, how to react to and handle these behaviors, how to decide what would be realistic standards for the child and how to set them, how to satisfy more adequately the child's social needs, how to avoid the hazards of comparing the child with other children, and so forth.

The indirect approach is suggested for parents who need considerable orientation before they are ready to deal with specifics of their child's problem and of his therapy program. Free communication is established in such a conference, with the parents carrying the bulk of the conversation. The function of the clinician or the classroom teacher who has called the conference is to guide the parents' thinking with appropriate questions or comments and to offer interpretations and suggestions, usually in the form of questions. Gradually, the parents gain insight into their child's problem, their own problem, and the parent-child relationships that should be established.

PARENTAL ASSISTANCE WITH THERAPY. It appears that mothers, when reasonably well-adjusted and properly instructed, can be of great help in remedial work with their children. Results of research indicate that the speech of preschool children can be improved significantly by parents alone if they have received

instruction from a qualified special teacher;[16] and that articulation of children with functional disorders of articulation improves more rapidly if mothers are trained to assist in remedial work than it does when they are not.[17] This increase in speed of correction, however, appears to depend not alone upon the mother's training in remedial work but also upon the intelligence of the child, the auditory discrimination ability of the mother, and the degree to which the mother has "healthy" attitudes toward child-rearing practices.

A procedure sometimes used in incorporating mothers into the remedial program is to ask them to observe therapy with their children at the scheduled time and to remain for a half-hour of instruction after the children have returned to their classrooms. Another procedure frequently used is to schedule meetings with relatively large groups of mothers at a convenient time during the day or in the evening, asking those who can do so to observe therapy with their own or other children at the scheduled hours. In special schools or centers to which mothers transport their children and which have adequate staffs, a supervisor or selected clinician often instructs mothers while their children are receiving remedial help from another special teacher. In very small special schools or centers in which one clinician must carry full responsibility, it is not unusual for him to offer remedial work to a group of children with mothers observing and then to turn the children over to a specially trained secretary who supervises their play or teaches them social skills while he instructs the parents.

In other schools or centers with limited staffs, the clinicians make use of a corps of mothers and sometimes a group of volunteers from service leagues, whom they have trained, who are delighted to contribute a half-day or more of their time during the week to assist with children. Some of these volunteers have become so interested and adept that they are able to take over the speech instruction of children while the special teacher is meeting with parents. A much-used pattern in training sessions with mothers

[16] LaRene C. Tufts and Audrey R. Holliday, "Effectiveness of Trained Parents as Speech Therapists," *Journal of Speech and Hearing Disorders* (1959), 24:395–401.

[17] Sommers, *et al.*, "Training Parents of Children with Functional Misarticulation," *Journal of Speech and Hearing Research* (1959), 2:258–265.

is 15 to 30 minutes of instruction on some phase of speech or hearing therapy by the special teacher, followed by a like time of group discussion of child development problems, speech problems, or behavior problems. Another pattern, frequently used in well-staffed clinics or special schools in which a supervisor or a selected clinician works with the parents, includes 15 minutes of lecture, 15 of discussion, 15 of observation of therapy with the children, and five minutes of demonstration. Still another pattern, often used in situations of this kind, includes 15 to 30 minutes of lecture and discussion, followed by observation of therapy with the children, followed by brief individual or group conferences between the mothers and the special teacher who is handling their children. Sometimes this procedure is reversed to brief conference, observation, and then lecture and discussion.

The speech program supervisor Some of the larger school systems employ speech and hearing supervisors who are held responsible for the quality, efficiency, and continuing improvement of the total program and who are, therefore, very important members of the team. The supervisor's specific duties are many and complex, involving as they do both general business administration and professional leadership. They include attention to budgets and inventory, records and repair, reports and supplies, classroom space and classroom design, public contacts and recruiting.[18] Then, in relation to the content of the speech program, they involve evaluating the work of clinicians and recommending their promotions, salaries, and transfers; conducting orientation sessions and in-service training for new clinicians and classroom teachers; scheduling screening of children to discover those who have speech or hearing handicaps; observing and supervising the work of clinicians; assisting in diagnosis; handling referrals of children to other professional services; organizing, supervising, and frequently instructing parent-training groups; organizing and supervising the young child program and the speech improvement program; arranging for student clinicians to do their internship or practice teaching in the program; and

[18] Excellent suggestions concerning recruitment activity are to be found in Gretchen M. Phair, Sibyl G. Gholson, Vera M. Gee, and Kathleen K. Pendergast, "Recruitment for Careers in Speech Pathology and Audiology," in *Public School Speech and Hearing Services, op. cit.*, pp. 105–113.

supervising the preparation of courses of study, handbooks, report forms, and instructional material. The supervisor carries some degree of responsibility for the morale of the personnel of the speech and hearing program, sharing this responsibility with other administrative officers and with those who are working in the program.

Members from administration and the helping professions Important for their contribution to the therapy team are its members from administration and from the various so-called helping professions. The supervisor of speech and hearing services, as mentioned above, makes a large contribution to the organization of the program. His primary concern is to help speech clinicians and classroom teachers to be of maximum service to the children and parents with whom they work.

THE PRINCIPAL. The principal makes a similar contribution, since his duty is to see that the children in his school receive the very best instruction possible under the very best conditions possible. It will be well to seek his cooperation, approval, and guidance in every major action taken in the speech program in his school. It is he who approves final schedules of remedial sessions and any bulletins or letters issued in the name of the program. Ordinarily he will be the person whom the clinician sees about assigned space, paper, folders, and chalk. He can be helpful in such matters as parent contacts, referral of children, and community customs. Usually he can be of considerable assistance in a staff conference concerning a child.

THE SCHOOL NURSE. The school nurse also is a member of the therapy team and is an invaluable person to include in the staff conference, since she is likely to have much firsthand knowledge of the child and his environment. She also may be able to furnish medical information about the child—in some schools the nurse keeps all medical records of children in her office. As a rule it will be to her that the clinician or classroom teacher refers any child who appears to have a medical problem; ordinarily she will make arrangements with parents and with medical doctors for examination and care of the child; results of the examination and reports on the progress of medical care will be made to her for transmission to the clinician or teacher. Usually she can give help

in contacts with physicians, dentists, orthodontists, otologists, otolaryngologists, and rhinolaryngologists in the community; sometimes she can obtain invitations to attend their local professional meetings and explain the speech services being offered. Frequently this is a first step to expand cooperative activity between the speech program and members of these professions. Usually the school nurse is also quite helpful in working up forms for use in a clinician's or teacher's medical referrals. (These carry needed information to medical personnel when a child is referred through her office for medical examination; another form reports the observations of these medical people relating to the child's speech or hearing problem.)

THE SCHOOL PSYCHOLOGIST. The school psychologist is another invaluable member of the team. Because of his training he can help in testing and diagnosis as well as in planning remedial work with children whose speech handicap is entangled with problems of adjustment, personality, learning ability, or achievement. Ordinarily he is to be included in case conferences involving children with such problems. It is desirable that the speech program be integrated with his plans and counseling procedures.

OTHERS. At times, many others are of great assistance in team effort. These include social workers, audiovisual and education specialists, art teachers, music teachers, physical education teachers, and custodians, all of whom in varying ways and at various times may make contributions that have a special quality of rightness about them.

The speech clinician The speech clinician, as one of the most important members of a child's problem, may so influence that child's behavior and personality as to reshape his small world. Each session involves an interpersonal relationship of unusual significance to the solution of the problem.

The clinician is concerned in very basic ways with that complex entity known as human behavior. He is interested in speaking behavior, as such, and he is interested in other kinds of behavior that are not speaking behavior. As Darley pointed out,

> these behaviors endlessly interact and are simultaneously acted upon by external forces. Our most enlightened view of them must be as ever changing—now manifestations of complex causal factors, now themselves

playing a casual role in further behavior modification. How shall we ever fully grasp what a child . . . is in all his individuality? As poorly as we understand . . . our own reasons for behaving as we do . . . how shall we comprehend what . . . Charles and Susan are and why they talk as they do and what it will take to help them? We gather wisdom slowly. We search for better tools accurately to assess behavior. We take time to study and integrate our results. We achieve the insight and perspective that come with extensive clinical experience. Given a long enough life and a rich enough "caseload" we learn that we cannot comprehend all we "know," and that humble realization will add grace to our efforts to be helpful.[19]

The speech clinician gives attention, then, to the child who has the speech problem, to the speech problem itself, to the people and the situations surrounding the child, and even to the people beyond the boundaries of the problem. In other words, his responsibility involves diagnosis and appraisal of a given speech handicap, development of a retraining program, encouragement of cooperative activity on the part of members of the problem, and dissemination of information to them—plus interpretation of the profession to the general public.

The speech clinician, in discharging this last-mentioned responsibility, welcomes opportunities to speak before community groups, to appear on radio and television programs, and to give interviews in the interest of informing the public about speech disorders and speech correction. He makes himself available to those who actively seek information. He also offers information when he senses that it is needed for an understanding of what speech problems are and what can be and is being done about them.

He will do well to acquaint himself with local service clubs, women's clubs, and women's auxiliaries that might be more than happy to accept the privilege of paying for the reeducation of some needy child or for such items as orthodontic braces, prostheses, hearing aids, or special surgery. He will find it useful to search out those local, state, and national agencies established to provide aid for children. These include mental health clinics, county and state departments of health, public welfare agencies, agencies for the care of handicapped children, and various de-

[19] Darley, *Diagnosis and Appraisal of Communication Disorders* (Englewood Cliffs, N.J.: Prentice-Hall, 1964), pp. 113–114.

partments and divisions of institutions of higher education. He should become acquainted with the work of foundations and of enterprises such as the United Cerebral Palsy Association, the Easter Seal Society, and the National Society for Crippled Children and Adults, which may be able to provide certain assistance in the local program.

CONCEPT OF TEACHING. The most important thing the speech clinician does is to help others. His aim is to contribute to the development of socially adequate, vocationally competent, normally strong, creatively adjusted, healthy, reasoning, imaginative, inspired, and happy people.

CONCEPT OF SELF. Basic to the building of good relationships is the clinician's view of self in relation to a school program. In the first place, and always, the clinician is a teacher. Failure to regard himself as a teacher circumscribes contributions that he can make to the development of children, limits his horizons and his potential for professional growth, creates strictures between him and other teachers and administrators, and works to the detriment of the profession. In the second place, no one area of instruction is all-important. The contribution that any one teacher can make to the development of children probably is no greater than that which can be made by any other teacher. Therefore, matters of primacy in instruction, scheduling, and similar problems are approached most effectively from the child's point of view, with an eye to the fact that these problems revolve exclusively around the child, his needs, his degree of readiness for certain types of instruction, his mental and emotional maturity, and other considerations.

RESPECT FOR OTHERS. Another basic requirement in the clinician is respect for the training, knowledge, skill, and contributions of others. This respect comes only as a result of understanding. It is well to listen actively and to become aware of the point of view of others, including those in the same profession. The clinician, therefore, will find it to his advantage to observe other clinicians in their work. And by visiting those who are offering other special services and talking with them, he will understand better how best to work with them. When he visits the classroom teacher, he will come to appreciate her task in handling large numbers of children and to admire the ease with which she

does it. There is much to be learned by observing her teaching methods, noting how she motivates desired behavior, how she attends to individual differences, how she lets the pupil learn by doing. He will find her classroom, her technique of control, and her careful planning instructive. If he remains alert to the ways in which he can coordinate his efforts with her instruction, he will learn much from her; if he is wise and considerate, he will see that she is aware of his appreciation and good will. By visiting the principal he will gain some measure of insight into his philosophy, his problems, and his many and varied duties and responsibilities. Finally, the clinician will, of course, confer with parents. He will learn that their child is very important to them and will more than ever realize that what he does for the child is tremendously important, too. He will discover that the parents, in many instances, are truly struggling so that the child may benefit from his guidance. This knowledge, in a very special way, gives the clinician a new sense of the meaning of his daily work and emphasizes for him the fact that the better people know each other, the more closely they are drawn together in mutual respect and support.

GROUP MEMBERSHIP. His professional responsibilities place on the speech clinician the necessity of cultivating the gentle art (or perhaps it should be called skill) of membership in the faculty of the school or schools in which he works. This willingness to be a member of the group may be demonstrated in many ways but primarily through active cooperation with those in the school and a lively interest in relevant community affairs.

The clinician is encouraged to get to know his principal and his supervisor or the individual to whom he is directly responsible. The ordinary official conference is not always adequate to develop a relationship distinguished by close feeling, complete understanding, and a sense of working together toward mutual goals. The initiative in advancing this relationship may rest with the clinician. As a rule, supervisors and principals are very reasonable people who respond warmly to warmth and cooperatively to cooperation. They will match respect with respect and so, more often than not, will welcome the chance to discuss ideas that are conceived to improve the school program.

It is most important for the clinician to know as many as pos-

sible of the other teachers in the school. This becomes a major task for the itinerant speech clinician, but a special effort should be made in that direction. The principal probably will be helpful in introducing the various teachers, but it is the clinician's responsibility to get to the school early or to stay as late after school hours as necessary to visit and work with the teachers in their classrooms or in the teachers' lounge. He can use recess time to go out on the playground with the teachers or to talk and plan with those who are not on playground duty. He can have lunch with the teachers, have dinner with them, know them as people, and let them know him as a person, not just as a speech clinician.

All school custodians can be helpful in various ways. They can assist in hanging mirrors, arranging the speech correction room, repairing shades, eliminating noise. Some will lend a hand in getting that audiometer or tape recorder from the parking lot to the third-floor speech room. A few, and they are worth hunting out, will do much more than this, for they will share the wisdom and the understanding that have made them a favorite with generations of children who have gone to "their" schools.

WILLINGNESS TO CONFORM. The educational program in any one school is likely to be different in some respect from that in another. Sometimes these differences stem from the varying philosophies of education held by the leadership in the various schools. Sometimes these differences have their origin in community characteristics or in type of pupil. In any event, the itinerant speech clinician who moves from school to school may become aware of such differences in time. He will be wise, while in Rome, to do as the Romans do. He may believe in free and easy discipline and may find it quite acceptable in one school but wholly out of place in another.

In the same way, expectations about teachers and schools may vary from one community to another. This fact should be duly considered by the clinician both before and after accepting a position.

WILLINGNESS TO COMMUNICATE. It is a prime responsibility of the clinician to keep channels of communication open and on an operational level. He must seek information, give information, and welcome information.

His supervisor sees that bulletins and announcements come to him from that office. The principal may not do this as a matter of routine, but usually is glad to when the clinician expresses an interest. Once the clinician has these materials, however, he should make a point of reading them, and not only for information, though that is the prime purpose; he is often able to find in them also suggestions and ideas he can put to use in new or renewed contacts with other teachers. Notices on bulletin boards are another source of information. So is word of mouth, which should always be evaluated carefully.

The clinician can provide information to others in many ways. Houchin, in a classic statement that has stayed current through the years, lists no fewer than 18.[20] Some of these have been mentioned earlier in this chapter, some in previous chapters; others will be noted in the discussion of reports. The opportunity to provide information comes in casual conversation as well as in more formal situations.

The clinician must welcome information if he is to relate closely with his colleagues, school, and community. This information sometimes comes in the form of criticism, but it should be stressed that significant changes often have been made in programs of speech correction because other individuals in a school system have heard criticism and have felt they could safely transmit the information to the speech clinician, knowing he would receive it in the proper way. The clinician should encourage reports of misunderstandings to him. Once they are known, he can go directly to the source and proceed to the business of developing understanding.

In connection with this matter of communication, however, it seems important to suggest that a great deal of it should never take place. There are few occupations more negative than carrying tales from one school to another, engaging in personal and perpetual criticism of others, chronically complaining, or, for that matter, listening to such communications and allowing them to color one's attitudes and affect one's actions.

WILLINGNESS TO EVALUATE WORDS. The power of words and the effect of labels (discussed in Chapter One) deserve emphasis

20 Thomas D. Houchin, "Cooperation in a Public School Speech Correction Program," *Journal of Speech and Hearing Disorders* (1948), *13*:247–250.

in the present connection. Parents do not like to hear their child called a "case" or a "patient." Neither do they enjoy hearing that he has been "referred," particularly to a "clinic." Nor do they appreciate the label of "handicapped" or "defective." They are not drawn to the clinician who uses strange technical terms instead of "just plain English." This is only another way of saying that the clinician's language is a powerful implement, useful in enhancing personal relationships as well as in carrying information.

DESIRE TO IMPROVE. The clinician who grows in his profession is very likely to be possessed of a healthy humility—he sees his own continuing need for improvement. He will then be more than likely to seek to improve himself as a person, as a teacher, and as a member of his profession. These aims become lifetime goals, seldom completely realized. Sometimes helpful in the ongoing effort, however, are exhortations such as these:

Take a look at yourself. Extend your reading, your observation, and your discussion to try to understand yourself and others. Discuss your problems with your colleagues. Learn to match activities with available time and energy. Accept the fact that sometimes it is necessary to live with imperfections. Observe. Participate. Talk. Compare notes with your colleagues. Search for better methods. Listen to evaluations from parents, colleagues, administrators. When evaluations are significant, revise your approach, your procedure. Above all, have confidence in your ability to learn, to improve, to grow. Join and participate in activities of professional associations. Read the periodicals published by these associations. Continue your education in whatever ways are open to you. Examine the new books in your field. Venture out of your own field into the literature on psychology, sociology, education, medicine, dentistry, electronics, recreation, human relations, group dynamics.

GETTING STARTED

In almost any endeavor except perhaps a sprint, a slow and careful start is indispensable to a strong finish. Certainly this is true in the development of a speech program, whether the program is new or whether the program is established but the

clinician is new. In either case, the clinician's slow and careful start will involve, first, over-all program planning; second, locating pupils with speech problems; and, third, preparing a teaching schedule.[21]

Over-all program planning It is easy for the speech clinician to become so involved with the trees that he cannot see the forest. The need for his services usually is so obvious and so insistent that he is pressed into a flurry of activity almost at once. This precipitous involvement has many of the hazards of a false start, so it should be avoided as much as is humanly possible. The point is this: the remedial speech instructor must look at the total job; must evaluate the particular situation; must formulate over-arching plans that are appropriate to the time the place, and the need and that take into account what has gone before as well as what he hopes will come in the future.

These plans will be affected by many things: the length of time the program has been in operation, the size of the school system, the number and variety of special services offered, the number of speech clinicians employed, the presence or absence of an audiologist on the staff, the administrative organization of the program, level of interest and information of school personnel regarding speech disorders and speech correction, public attitudes and pressures. And over-all planning must include certain matters of preparation: the clinician will need to become acquainted with the school system; he will want to establish a good climate for speech correction; he also must check into availability of space and equipment—and he even may need to find that space; he will want to obtain materials, build and train a "team," spend time with classroom teachers, make surveys, retest individual pupils, prepare case histories, plan schedules, plan the details of day-to-day activity, make referrals, and make reports.

21 These procedures are described in detail in books dealing specifically with the subject, for example, Black, *op. cit.*; Eisenson and Ogilvie, *op. cit.*; Ollie L. Backus and Jane E. Beasley, *Speech Therapy with Children* (Cambridge, Mass.: Riverside Press, 1951); Lucile Cypreansen, John H. Wiley, and Leroy T. Laase, *Speech Development, Improvement, and Correction* (New York: Ronald, 1959); Ruth Beckey Irwin, *Speech and Hearing Therapy* (Englewood Cliffs, N.J.: Prentice-Hall, 1953); and Stanley Ainsworth, *Speech Correction Methods* (Englewood Cliffs, N.J.: Prentice-Hall, 1948). The last is particularly useful as a quick guide, since it is relatively short and is organized for easy reference.

Many of these tasks may be rather demanding. For example, the simple matter of finding space may prove difficult if for no other reason than that most schools are overcrowded. The writer, while visiting speech clinicians interning in public schools, has found them working in book rooms, teachers' lounges, cafeterias, corridors, and, in good weather, under trees. In spite of space difficulties they have been doing good work.

An ideal room is pleasant, well-lighted, easily accessible, quiet, attractively decorated, well-ventilated; it is equipped with a blackboard, large and small mirrors, chairs and tables of varying sizes, perhaps even a cot. It has a letter-size file cabinet, a file for four-by-six cards, a speech recorder, and storage space for books, pictures, toys, modeling clay, games, and other instructional equipment. As noted above, however, it should be remembered that very good work can be done without ideal space and equipment.

Unless absolutely necessary, the nurse's room or the principal's office should not be used for testing or for special classes. These particular cubicles too often are associated in the mind of the youngster with physical examinations or disciplinary actions which have not always been particularly enjoyable; also, interruptions are likely to be frequent.

Of all the parts and pieces that go together to make a good start, one of unusual importance to the total program is concerned with establishing a good climate for speech correction in the community. If the program is old and flourishing, the climate may be good to begin with. If, however, the program is new or is an old one revitalized, then, before it gets under way, there should be newspaper publicity, radio and television features, letters to parents, talks at meetings of the Parent-Teacher Association, and talks to various civic service organizations. The purpose of all this activity is to inform parents and the general public on points such as these:

1. the prevalence of speech problems;
2. the influence of speech problems on a child's educational progress and personality development;
3. the fact that most speech difficulties are not outgrown;
4. the possibility of correcting most types of speech impairments;

5. the desirability of rehabilitation at an early age; and
6. the idea that a speech problem is no disgrace, that seldom is it causally related to mental retardation.[22]

If this job is done well, it will contribute much to community understanding, acceptance, and cooperation, forestalling as it does those problems that tend to develop from misconceptions or incomplete information.

CONCEPT OF GOALS. The capstone of over-all planning is the active conceptualization of goals; perhaps it would be more logical to say that the basis of over-all planning is this conceptualization. From either point of view, the goal gives direction to the program that is well-planned.

Backus and Beasley use spatial relationships to present this idea graphically, suggesting that a child's present situation may be thought of as a region, that the goal of his therapy is then another region, and that the route from the first to the second region is by paths that are, of course, the elements of the therapy program.[23] They illustrate the meaning of goal to the total program by suggesting that when the clinician views the goal region as one in which the child recites practice material correctly in a clinic class, a certain kind of procedure will be used. "If, on the other hand, he views the goal region as one in which a child talks freely and productively in real life situations, he will organize teaching procedures more in terms of real life situations, in which phonetic accuracy is only one aspect of speaking behavior."[24]

DISMISSAL FROM THERAPY. The goal becomes the clinician's guide in making the decision that a child is to be dismissed from therapy. This is not to say that the goal is always reached before dismissal or that a child is kept indefinitely in the therapy program because it is not. Compromises often are necessary. The child may be dismissed temporarily or permanently when he is still far from the goal. He may be dismissed temporarily because, at the moment, he lacks the desire to achieve and, at least for the time being, seemingly cannot be motivated. A child may be dismissed, perhaps permanently, because he does not have the mental,

22 Backus, *Speech in Education* (New York: Longmans, Green, 1943), p. 96.
23 *Op. cit.*, pp. 3–32.
24 *Ibid.*, p. 7.

physical, or emotional qualifications to profit from additional therapy. Another will be dismissed, perhaps temporarily, because he is caught up in environmental problems that overshadow his work in the program and, therefore, he is not likely to profit from additional therapy until his environment can be changed. Still another will be dismissed, again perhaps temporarily, because he has reached a learning plateau above which it appears he will not move, at least at the immediate time. The clinician keeps records on temporary dismissals so that he can retest later and reassign to therapy those for whom this is appropriate.

If the goal involves the desired broad concept of adequacy, some individuals may be retained in therapy despite the fact that they have achieved a useful level of communication skill. They will be retained because they are not yet able to handle themselves in an oral communication situation without experiencing fear and anxiety in such a measure that their speaking and listening behavior are affected negatively. These individuals will receive continued help of a kind indicated by their problems.

Occasionally the clinician will release a child to parents or other individuals to complete the work of therapy. This will be done only after he has trained these people. The child, then, has not been dismissed but reassigned. The clinician continues to supervise the remedial work, conferring with the parent, offering suggestions as to procedure, keeping track of progress, testing from time to time, and finally making arrangements for dismissal evaluation.

Locating pupils with speech problems After over-all planning has been given attention, the next essential step in getting a speech program under way is to find the children with problems. To discover those children with hearing deficiency, we use the procedures explained in Chapter Eight. To discover those children with speech deficiencies not related to hearing loss, three procedures may be followed: (1) class visitation, (2) referral, or (3) survey.[25]

CLASS VISITATION. As the name implies, class visitation involves listening to the oral activities of an entire class and noting those

[25] Vivian I. Roe, Clair N. Hanley, Carol M. Crotty, and Lois R. Mayper, "Clinical Practice: Diagnosis and Measurement," in *Public School Speech and Hearing Services, op. cit.*, p. 52.

individuals who have speech problems. It is a relatively inefficient method because so much time is spent in waiting to hear each student read or converse at sufficient length to discover and evaluate difficulties.

REFERRAL. Many schools that have the services of a speech clinician use the referral system.[26] Here the special teacher relies upon the reports of classroom teachers, parents, the school nurse, the school psychologist, or others of the school staff to inform him of pupils with speech problems, including those associated with hearing loss. Ordinarily, where this procedure is used, the principal or the speech clinician requests from each grade or homeroom teacher a list of those pupils who are thought to have speech difficulties. In secondary schools that do not have a homeroom arrangement, the request is made of English or social studies teachers; these instructors usually have contact with all students and, moreover, have an opportunity to listen closely to their use of oral language. After the lists are presented, the speech clinician gives each designated pupil a thorough examination to determine more definitely the presence, the kind, and the severity of his problem. The referral method has certain readily apparent disadvantages but also the great advantage of enlisting the cooperation of each classroom teacher at the outset of the program and of saving the clinician's time. When a considerable amount of oral work is done in the classroom and when the classroom teacher has had some experience in observing speech deviations, this procedure is efficient because over a period of time she hears her students in a variety of oral situations—before many days have passed she knows something of the nature and severity of their speech problems.

SURVEY. The survey method is probably the most thorough procedure in locating children with speech and hearing problems. It is designed to screen out quickly, by means of a short test of spontaneous and directed speech administered individually, those children who have difficulties; each such child is then given a more thorough examination.

The speech survey, if used by the speech clinician to check an entire school, requires consultation with the supervisor, careful management, and considerable planning to insure efficiency and

[26] *Ibid.*, p. 54.

orderliness. Preliminary arrangements should start with the principal, who will give the necessary authority to proceed, will provide adequate physical arrangements, and will advise on scheduling, so that the survey activities will not conflict with previously arranged assemblies, demonstrations, or other school events.

The classroom teacher is consulted well in advance of the survey, so she may arrange instruction in such a way that it will not be unduly hampered by the coming and going of pupils in and out of the room during the survey. The clinician, too, can adjust his schedule to take care of special requests. He will want to request a copy of the class roll at the time of the preliminary consultation and use this roster to keep a check on pupils as they report for examination. Those who are absent on the survey day can be examined after their return to school.

At the time of the examination the clinician informs the class or group of the general purpose of the survey. Considerable flutter and some tension can be avoided by simply telling elementary school youngsters that they are going to be asked to read some sentences or name some objects in pictures; it is better to avoid the words "test" and "examination." In spite of such care, however, some pupils wil react tensely to what they size up immediately as an examination situation. A good-natured attitude on the part of the officiating teacher, as well as friendly, bantering conversation, will help to dispel that tension. In addition, the pupils will be given clear, simple, easy-to-follow directions about coming and going so they will feel sure of the procedure.

During the survey, the clinician usually takes four to six children at a time. As each is tested he returns to his own room. The next group starts for the speech room when the first of the current group arrives. This procedure continues until the entire group has reported. It allows the clinician to work rapidly and efficiently without being delayed by pupil transit time.

The speech test used should consist of both spontaneous speech and directed speech in as free and natural a situation as possible. The test may start off with a lively conversation about a coming holiday and along the way turn to naming objects on the teacher's desk or to identifying objects in pictures. This procedure will be reversed in some cases. The sole purpose is to obtain speech from

the child; to this speech the clinician listens intently in order to detect deficiencies or problems. He will be able to detect faults of vocal quality, pitch, loudness, rate, fluency, and articulation in the spontaneous conversation. He will examine articulation of individual sounds in the directed speech test. Directed speech tests fall, roughly, into three categories: (1) the test that is set up in the form of a paragraph or story; (2) the test that uses loaded sentences or word lists; (3) the test that makes use of pictures or objects.

Material used for testing should be carefully selected. It should be graded to the ability and experience level of the child. The Rinsland *Basic Vocabulary of Elementary School Children*[27] or the revised and enlarged Gates *Reading Vocabulary for the Primary Grades*[28] serve as guides for the selection of pictures or objects to test the articulation of primary grade children.[29] Readers used at the various grade levels are also helpful guides. The Thorndike word books aid in the preparation of a test for the secondary school levels.[30] Pictures and objects should be selected so that the thing (object, color, shape, action) to be named is within the experience of the pupil, will draw the desired speech response, and is attractive and interesting.

Survey testing may be limited to consonant sounds because vowels are seldom misarticulated. If the child's speech seems to be fairly clean-cut, the survey articulation test may be further limited to the most frequently misarticulated consonants: *r*ug, *l*eaf, *th*read, *th*at, *s*aw, zoo, *sh*eep, treasure, *ch*air, *j*ump. Most speech clinicians prefer to test each sound in initial, medial, and final positions in the word. Some, however, suggest that in rapid survey testing it is sufficient, except for *s* and *l*, to test the consonants in only the initial position; and also only one of a voiced

27 H. D. Rinsland (New York: Macmillan, 1945), or Rinsland, *The Vocabulary of Elementary School Children of the United States* (Norman, Okla.: University of Oklahoma Press, 1938).

28 A. I. Gates (New York: Teachers College, Columbia University, 1935).

29 See "Testing Articulation," in Johnson, Darley, and Spriestersbach, *op. cit.*, chapter 4, for a detailed discussion of the problems of preparing and administering tests of articulation.

30 Edward L. Thorndike, *The Teacher's Word Book;* or Thorndike, *A Teacher's Word Book of the Twenty Thousand Words;* or Thorndike and Irving Lorge, *The Teacher's Word Book of Thirty Thousand Words* (New York: Teachers College, Columbia University Press, 1921, 1932, 1944, respectively).

and voiceless pair, for example, for the *z* and *s* pair, only *s*, not *z*.

From 25 to 35 pupils can be tested in one hour in a speech survey. The purpose is to screen out those who seem to have speech problems, not to give each one a complete speech examination.

TIMING. In general, we can say that we should start doing something about a child's speech or hearing as soon as we discover that there is a chance that either of these skills may not develop normally. Essentially, this statement says that the child should be checked for normal development of speech and hearing as early as it is possible to make an adequate evaluation and that rechecks should be made several times until he has passed the age of 8.

A central question in the planning of therapy concerns the child under 8 who misarticulates sounds of one kind or another: how can we predict that he will or will not, as he grows older, achieve accurate speech-sound production without special training? Most children do, a fact which has led Templin to suggest that the optimal age to start articulation therapy is "not necessarily the youngest age."[31]

We may note here, parenthetically, that there are times when a clinician, in his best judgment, asserts that a child under 8 should have remedial work in articulation. He is not necessarily making a prediction, however; he may simply be saying that the child needs help now for the sake of adequate adjustment—which is quite another thing.

Returning to the matter of speech development in the young child, we find that one possible method of prognostication is by a test of the child's stimulability. If he is able to pick up new sounds as a result of a few stimulations by the clinician, probably his speech-sound development should be left to natural processes; if he cannot, perhaps he should have clinical help in some degree along the way. Research supporting use of stimulability as a tool of prognostication is reported by Carter and Buck and by Farquhar.[32]

[31] Mildred C. Templin, "Possibilities of Research for Public School Speech Therapists," *Journal of Speech and Hearing Disorders* (1953), *18*:355–359.

[32] Eunice T. Carter and McKenzie Buck, "Prognostic Testing for Functional Articulation Disorders among Children in the First Grade," *Journal of Speech and Hearing Disorders* (1958), *23*:124–133; and Mary Stuart Farquhar, "Prognostic Value of Imitative and Auditory Discrimination Tests," *ibid.* (1961), *26*:342–347.

Another method of prognostication is to measure the amount of improvement that naturally takes place in the articulation of a child from the beginning to the end of a specified period of time —usually a matter of weeks. Children who show little or no improvement from the initial to the final test probably will require therapy. Steer and Drexler, who suggest this procedure, conclude, from a study of 93 kindergarten children, that certain factors in the articulation of children at this age level do have predictive value.[33]

Scheduling remedial classes After children with speech or hearing problems have been located and parents contacted for permission to work with them in special classes, the clinician prepares a schedule of remedial classes. But before he sits down with a list of children and a ruled-off schedule sheet to assign children to groups and groups to class periods he will want to do a great deal of preliminary work. This will include intensive thinking about the children, their problems and personalities, and also about some other factors that are mentioned below.

ADMINISTRATIVE FACTORS. Somewhere along the way the clinician will want a conference with the principal of each school in which he is to function. The purpose of this conference will be, first, to establish a congenial interpersonal relationship, and, second, to inform himself generally about the administrative, educational, and procedural philosophy of the school, and specifically about any preferences that the principal may have about the remedial schedule. Some principals, for example, prefer that the children not be taken out of certain classroom instructional periods, such as the reading period or the writing period, or out of rest periods or milk periods. No doubt the principal will provide a schedule of classes for each grade; then the clinician will try to plan as nearly as possible to avoid interference with regular classroom schedules.

CLASSROOM FACTORS. The clinician undoubtedly will want to hold conferences with classroom teachers. Usually these conferences are quite informal and take place before or after school, during the noon hour, on the playground, or at any convenient

[33] M. D. Steer and Hazel G. Drexler, "Predicting Later Articulatory Ability from Kindergarten Tests," *Journal of Speech and Hearing Disorders* (1960), 25:391–397.

place or time when the classroom teacher is at least semifree from the responsibility of directing and instructing some 25 to 35 individualists. In these conferences, the clinician attempts to learn as much as possible about each child to whom he will offer remedial lessons. Also, he carefully considers any special requests the teacher may make because of her program or based on her knowledge of the child.

CHILD FACTORS. At this early stage in their relationship, the clinician will have obtained some knowledge of the child and his characteristics during the screening procedure, from his permanent record in the principal's office, and from the mother, if he has contacted her personally about placing the child in a remedial class. The fourth source of information, at this point, is the classroom teacher, who perhaps will be able to answer these three major questions: What seem to be the child's interests outside the classroom? What are the child's particular strengths and weaknesses in various subject matter and skill areas? What are some of the personality characteristics of the child?

The clinician is thoughtful and considerate of the child. For example, if the child is absorbed in a particular study or activity, it would be unkind to take him away from it; he might very well be resentful, and the resentment might seriously handicap the remedial effort.

If the child has certain interests outside the classroom, these may provide a good start for the first conversations with him. Such interests then may become common ground for planning remedial lessons.

FREQUENCY OF REMEDIAL SESSIONS. In general practice today, most public school remedial speech and hearing teachers (43 percent) meet individual children twice a week and most (53 percent) also meet groups twice a week. Only about 6 percent meet individuals and groups three, four, or five times a week.[34]

At the present time, we have little in the way of experimental evidence to support reasonably positive statements concerning the frequency with which remedial sessions in speech and hearing should occur. In a pilot study comparing the block system (daily therapy for several weeks) and the intermittent system (therapy

[34] Dale S. Bingham, Rolland J. Van Hattum, Margaret E. Faulk, and Eleanor Taussig, "Program Organization and Management," in *Public School Speech and Hearing Services, op. cit.*, pp. 33–49.

perhaps twice a week but continuing through the year), results indicate that children with articulation problems showed significantly greater gains under the block system than did children under the intermittent system.[35] In another exploratory study, a 40 percent rate of dismissal from therapy was recorded for the block system as compared to a 20 percent rate for the intermittent system.[36] In a year-long study in the Chicago schools, however, negligible difference in speech progress was observed between two groups of children, after one group had had speech therapy once a week for a year and the other had had speech therapy twice a week for a semester.[37] It is interesting to note that when the experiment was being planned the block system was considered and rejected as being "so unwieldy administratively in a large school system as to outweigh any possible advantages."

COORDINATION DAY. In many school systems, Wednesday or Friday is scheduled as "coordination day." In the Ohio public schools, for example, a so-called coordination day is used to provide extra time for instruction of children who are not making desired progress; to confer with parents, classroom teachers, and other individuals; to make home calls; to visit classrooms and observe the carry-over of remedial training; to give individual diagnostic speech and hearing tests; to conduct in-service training of teachers; and to work with various agencies.[38] In addition, the day may be used for meetings of parent study groups, parent training groups, and staff; sometimes it is used for the young-child clinic and for the preparation of materials to be issued as part of the young-child parent education program.

SYSTEMS OF SCHEDULING. The typical method of scheduling children on a twice-a-week basis is to use either a Monday-Wednesday and Tuesday-Thursday arrangement or a Monday-Thursday and Tuesday-Friday arrangement. This leaves either Wednesday or Friday for "coordination day."

[35] J. Weaver and Janet P. Wollersheim, cited in Black, *Speech Correction in the Schools, op. cit.*, pp. 28–30.

[36] Van Hattum, "Evaluating Elementary School Speech Therapy," *Exceptional Children* (1959), *25*:411–414.

[37] Berniece G. Fein, Muriel Green Golman, Henry J. Kone, and Carol Raymond McClintock, "Effective Utilization of Staff Time in Public School Speech Correction," *Journal of Speech and Hearing Disorders* (1956), *21*:283–291.

[38] Irwin, "Speech and Hearing Therapy in the Public Schools of Ohio," *Journal of Speech and Hearing Disorders* (1949), *14*:63–68.

LENGTH OF REMEDIAL SESSIONS. Almost 60 percent of the public school clinicians in service use from 25 to 34 minutes for group remedial sessions, and almost 30 percent use from 15 to 24 minutes. Over 35 percent use 25 to 34 minutes for individual remedial sessions, while 40 percent use from 15 to 24 minutes, and 10 percent schedule individuals for no longer than 14 minutes.[39]

THE FINAL SCHEDULE. Once a tentative schedule is drawn, the clinician will check it out with the principal and the classroom teachers involved. When the schedule has been checked, the principal, such other administrative officers as are involved, and the classroom teachers are given appropriate information from it. As a rule, distribution is from the office of the principal.

METHOD AND PROCEDURES

We are ready now to talk about methods and procedures used by the clinician from the time he first sees a child to the time he dismisses him from therapy.

Examination-evaluation The good remedial speech teacher —or good teacher of any sort, for that matter—wants to know as much as possible about each child who comes under his instruction. He realizes that he can plan intelligently for the child only in the measure that he is aware of the child's needs and interests, his abilities, capacities, and limitations, his drives, ambitions, and personal characteristics. The clinician realizes also that he must try to understand the child's environment, especially as it may have affected or now is affecting his behavior. Finally, the clinician will organize his information about the child in order to gain insight into the problem that brings that child to his attention. This process of obtaining information and reasoning from it to a solution of the problem usually is referred to as "examination" or "evaluation" or "diagnosis." As was pointed out in Chapter One, perhaps "evaluation" is to be preferred to "diagnosis." So here we will hyphenate the two terms, "examination" and "evaluation," to indicate that the activity suggested by each is part and parcel of the diagnosis or process we are discussing.

[39] Bingham, *et al., op. cit.*, p. 39.

Examination-evaluation involves three overlapping and often concurrent activities: obtaining information, recording information, and making inferences from that information. Information is obtained by observing, interviewing, and testing. Information is recorded in the form of a clearly stated, concise, objective report called the "case history." Inferences are made from the facts assembled and are recorded as such.

OBTAINING INFORMATION. *Observing.* One way of obtaining information, as we have said, is to observe: observe what the child does and does not do that interferes with his oral communication; observe, insofar as possible, the structure and functioning of the vocal organs; observe, when this is possible, the behavior of the child in a variety of situations—with his parents, with other children, in solitary play; observe his behavior during the examination; observe reflectively, noting behavior that is relevant to speech and hearing problems and their causes. Previous chapters of this book have provided essential information on what may or may not have this relevancy. Experience in dealing with specific handicaps will increase the clinician's ability to observe selectively. Diagnostic manuals are helpful. Appendix III of this book offers a list of things to look for. The wise clinician, however, does not allow himself to be circumscribed by any book, for it could be wrong; it could have neglected something important. He is urged to remain alert to any behavior or relationships that might have some important bearing on the problem.

Interviewing. A second means of obtaining information is through various forms of oral or written exchange that for convenience are called "interviews" (although that term usually means only the oral form). The clinician is the interviewer, and his questions or suggestions or encouragement provide the framework for the exchange. The interviewee may be any member of the problem; usually it is the child or his parents or both.[40] Of first consideration in interview situations is good rapport that bespeaks mutual respect and trust, a sincere attempt at understanding, and a sharing of problems and experiences.

Interviews with children are sometimes written. These may be autobiographies or essays, depending on the degree of directness the clinician feels is important in a given situation. The auto-

[40] See Johnson, Darley, and Spriestersbach, *op. cit.*, pp. 28–41.

biography can help the clinician become acquainted with the interviewee, but its effectiveness decreases below the upper elementary grades. Some other technique, such as observed play, is used at the lower elementary levels. The autobiography ordinarily includes information on such topics as parents and family; teachers, classmates, friends, enemies; shortcomings, achievements, talents, interests; kinds of punishment, from whom, for what, and reaction to them; happy and unhappy experiences; kinds of praise, from whom, for what, and reactions to them; fears and dislikes; thoughts as they occur to him, writing as rapidly as he can without revision and then later putting them in some kind of organized form if this seems desirable. Essays differ from autobiographies in that usually they are written on a suggested single topic such as "People I Like Best to Know."

Interviews with parents often yield information concerning the nature and etiology of the child's problem; sometimes they do not, except indirectly. During the interview, of course, the clinician, as the interviewer, is observing. He obtains direct factual information about the child as it is reported, but he also obtains indirect information about environment, attitudes, and understandings. Often interviews with parents precede the beginning of the work with the child. Sometimes they do not, especially when the child or parent or both exhibit great anxiety about the handicap. In that case exploratory therapy is started immediately. Then interviews, home visits, testing, and observation of the child in play situations become concomitant activities.

Interviews with parents always are important, if only from the point of view of the cooperation and assistance they encourage. Successful interviews with parents are prime instances of good public relations.

At the Child Guidance and Speech Correction Clinic of Jacksonville, Florida, initial parent interviewing is in a group meeting. This provides for early contact with parents, makes possible an early formulation of a tentative plan of diagnosis for both children and parents, and proves to be an efficient arrangement for channeling children to other professional services for examination. Ten to 12 parents are scheduled for each meeting, which lasts approximately one hour. The meeting is conducted by a speech clinician with another member of the

clinic staff present, perhaps a school psychologist, social worker, nurse, classroom teacher, or another special speech teacher. Parents are seated around a conference table, and a folded card, on which is printed their child's first name, is placed on the table in front of each couple.

The leader introduces himself and the additional staff member, explains the purpose of the meeting, and asks each parent-pair to talk about their child and his problem. The staff members listen carefully to what is said—and what is not said—gaining thereby some notion of parent-child relationships as well as formulating ideas as to what examinations (medical, psychological, or whatever) each child might need. After all the parents have talked, the clinician outlines the procedures of the clinic, including interviews and diagnostic tests, and suggests the kinds of recommendations that may be made.

After the meeting, the staff members review the session in order to arrive at tentative decisions on services needed.[41]

Whether the clinician interviews parents singly, as couples, or as groups, he will need to decide, in general, what he wants to know; he will allow enough time so that the interview will proceed at a comfortable pace, neither too slow nor too fast; in order not to hold up the progress of the interview, he will use a rapid method of notetaking, but he will be careful to date all important events in terms of month, day, and year, and to note all names and relationships.

In the directive interview the clinician assumes full leadership and full direction of the inquiry. One function of the respondent is to provide full and accurate information. General questions, as a rule, are posed early in the conference. Specific questions come later when it becomes necessary to tie down, clarify, or elaborate a point; so also do questions that are likely to bring a negative reaction or answer.

These suggestions have proved helpful in interviewing: If you feel it is necessary to present a delicate, intimate, emotion-laden question, do not do so until you are sure you have established rapport with the respondent and have prepared him for the ques-

41 D. Kenneth Wilson, Haim G. Ginott, and Shirley L. Berger, "Group Interview: Initial Parental Clinic Contact," *Journal of Speech and Hearing Disorders* (1959), *24*:282–284.

tion; then ask it in a matter-of-fact, straightforward manner. Phrase questions as simply and clearly as you can. Know what you are going to ask before you ask it; then you can avoid hesitating, rephrasing, qualifying, changing direction. Avoid questions that will draw a misleading or insufficient "yes" or "no" and questions that suggest an answer or tend to bias the respondent. Ask certain questions that will double-check others, particularly when you have noted inconsistencies or discrepancies. Accept emotional responses matter-of-factly and with tact. Establish time-place and individual-to-individual relationships with care. Define terms if necessary; ask for definitions if you need them. Note the reactions, language habits, and attitudes of the respondent. Identify inference as such and fact as such. Keep control of the interview at all times.

In the nondirective interview the clinician encourages the person or persons being interviewed to do most of the talking. Occasionally he talks or asks questions for information, or to stimulate the respondent in the direction of additional response, or to reduce anxieties; generally, however, he listens actively in a friendly, patient, and intelligent manner. He responds, matter-of-factly, to the emotional attitudes expressed in somewhat this manner: "You became angry when your son refused to obey your command." He is careful never to let his manner, attitude, voice, or bodily expression indicate approval, disapproval, or any other reaction.

The purpose of the nondirective interview, in addition to obtaining information, is to bring about self-understanding, self-direction, and self-responsibility by giving the respondent a chance to become more conscious of his own attitudes and feelings, to gain insight into the significance of his behavior, and to accept some obligation to contribute to rehabilitation.[42]

[42] For detailed treatment of various interview procedures, including the nondirective type, see Walter Van Dyke Bingham and Bruce Victor Moore, *How to Interview*, 3rd rev. ed. (New York: Harper & Row, 1941). See also Robert K. Merton, Marjorie Fiske, and Patricia L. Kendall, *The Focused Interview: A Manual of Problems and Procedures* (New York: Macmillan, 1956); Anne Fenlason, *Essentials in Interviewing: For the Interviewer Offering Professional Services*, rev. ed., Grace B. Ferguson and A. C. Abrahamson (New York: Harper & Row, 1962). A particularly authoritative presentation of the nondirective method is to be found in Carl Ransom Rogers, *Counseling and Psychotherapy* (Boston: Houghton Mifflin, 1942).

Testing. A third way to obtain information is to use appropriate tests of the child's physical and mental abilities. Hearing tests, of course, are to be administered periodically to all children in the school (by the methods discussed in Chapter Eight). Intelligence tests are useful when low mentality is suspected, although knowing progress in school is sufficient in most cases. If the school has a testing program, the results of such testing may be useful to the clinician. Of course if he has the time, the resources, and the necessary training, he may choose to give a specific test to a particular child for a particular purpose.[43]

RECORDING INFORMATION. After information is obtained by observing, interviewing, and testing, it is recorded in reviewable form in clear, precise, and specific statements. Factual information is recorded as fact; inference is recorded as inference. Quotation marks are placed on statements recorded exactly as spoken. If there is a question whether a statement is factual, a question mark in parentheses—(?)—is placed beside it. Time-space and individual-to-individual relationships are noted clearly. If the information comes from more than one respondent, the source of each statement is noted. The art of good reporting comes into play here.[44]

The dangers of labeling have been discussed many times in this book; one author or another has pointed out that, once a speech problem is labeled, the clinician and others may tend to overlook items of behavior that could lead to a different diagnosis. They may read into behavior the things they have learned to expect in a problem so labeled. They may fail to make those observations that would seem irrelevant in view of the label. As a result, they may jump to conclusions about the required type of treatment and retraining. Some speech clinicians use classifications only very rarely and for special purposes, or not at all; they argue that any one handicapped individual may be classified in several different categories and that there are significant differences between individuals who might be placed in any one category. They emphasize the value of simply describing clearly and fully the facts in each case and treating each case on its merits

[43] For methods of diagnosis and appraisal see Darley, *op. cit.*, and Johnson, Darley, Spriestersbach, *op. cit.*

[44] See S. I. Hayakawa, *Language in Thought and Action* (New York: Harcourt, Brace, 1949).

and according to its requirements; that is, they regard each individual as unique. These suggestions all have merit. In the interest of record keeping in the working situation, however, a label often serves as a handy kind of shorthand; therefore, its use in that limited sense is highly acceptable.

INFERENCE. Finally comes the task of inference—the task of reasoning about and from the information that has been accumulated. To list this as a final step in examination-evaluation is not to imply that it is to be done last or even that it can be separated from the process of gathering information. As a matter of fact, the clinician has been weighing information all along with an eye to making inferences. What he does at this point is to refine the thinking he already has done while he was obtaining and recording the information. He will want to ask himself at least five questions: (1) What kind of person is this child? (2) What kind of environment affects his development? (3) What are the cause-effect relationships involved in the problem? (4) What do clearly analogous cases tell me about the problem? (5) What kind of remedial program is indicated? Much that has been said on preceding pages will help you to answer all these questions, but additional comments on the third and fourth may be useful.

The question of what analogous cases tell about the problem can be answered partially on the basis of the etiology of various handicaps, a subject considered in adequate detail in preceding chapters. The complete answer, however, also requires an exercise in logical analysis. A guide to that analysis may be found in these further questions: Can you establish a definite, clear-cut, causal relationship? Is the cause you suggest adequate to produce the handicap? Is more than one cause operating? Are certain conditions clouding a cause-and-effect relationship or are they producing what appears to be a cause-and-effect relationship when none exists? Have all facts used in the analysis been verified? Basic to all of this thinking must be awareness of the fact that $case_1$ is not $case_2$. Any two cases must be exceedingly alike in all major respects before something unknown about $case_1$ can safely be assumed to be similar to a parallel something in $case_2$.

The examination-evaluation is completed when information about a given child has been obtained by observing, interviewing, and testing; when that information has been recorded in

the case history; and when, on the basis of that information, a particular course of action has been indicated.

Groups or individuals? There is a tendency to think in terms of "individual" and "group," and so we refer to "individual" therapy in which the clinician offers assistance to one person and "group" therapy in which the clinician offers instruction to more than one person at the same time. We reluctantly bow to this terminology with the comment that, if the atmosphere in the remedial situation is friendly and cooperative, then the clinician-child teaching arrangement is, in a very practical sense, as much a "group" as the clinician-children arrangement; and if the clinician is handling a "group" of children, he cannot avoid offering "individual" instruction that concentrates for brief moments upon one person and then another in the group.

WORKING WITH GROUPS. Speech therapy within the context and climate of a group has strong advocacy. Articles about it have appeared with increasing frequency over the years; moreover, it is widely used. Results of a national survey of public school speech and hearing services indicate that most of the remedial work in speech in public schools is carried on with groups of children.[45] Survey results also indicate that clinicians in public schools each week instruct, on the average, about 10 children individually and 101 children in groups of four or five; that only 1 percent conduct no group therapy; that 14 percent conduct no individual therapy; that group procedure is used most frequently in handling problems of articulation and stuttering, speech handicaps comprising more than 87 percent of the public school case load; that group procedure is used less frequently with problems of delayed speech and problems stemming from organic disorders, almost never with problems of hearing.[46] It is to be noted here that in current practice both speech reading and auditory training are being done in group situations.

HOMOGENEOUS VS. HETEROGENEOUS GROUPING. The advantage of any one type of grouping over another is clouded at the

[45] *Public School Speech and Hearing Services, op. cit.*

[46] Myfanwy E. Chapman, Esther L. Herbert, Charlotte B. Avery, and John W. Selmar, "Clinical Practice: Remedial Procedures," in *Public School Speech and Hearing Services, op. cit.*, pp. 59–60.

moment by inconclusiveness of research results, lack of definition, and division of opinion. In the 1961 national survey, 56 percent of the practicing public school clinicians stated a preference for homogeneous grouping while 29 percent stated a preference for heterogeneous grouping.[47] Although homogeneous and heterogeneous groupings are mentioned frequently in the literature on speech and hearing disorders, rarely is any attempt made to lay out boundaries of reference. It would seem that most writers use the term "homogeneous" to refer to similarity of disorder. But a group that is homogeneous in regard to type of disorder can be extremely heterogeneous otherwise.

Shames reports a study which, though "far from conclusive," suggests that "when individuals in a speech therapy group resemble one another in age, education, sex, socio-economic level, type of speech problem, and types of social and psychological difficulties, they will attain, on the average, greater success than individuals in a group in which there are wide ranges among members in these factors."[48]

GROUP SIZE. Public school clinicians indicate that four or five children make up an ideal size group.[49] However, practice varies. Some clinicians instruct children who need intensive therapy in groups of two or three or individually; those who need only an average amount of help, in groups of six or seven; those who are establishing new skills, in groups of eight to 10. In these larger groups, when the objective is habituation of new speech or hearing behavior, most of the work is carried on through talks, discussions, and plays.[50]

We do not wish to leave the impression that the degree of severity of a speech or hearing problem automatically indicates whether there is or is not a need for individual therapy. Bloom claims that, in work with *adult* aphasics, "it is with the patient with the least residium of language function . . . that the group program . . . has been most successful," and suggests that

[47] Chapman, *et al.*, *op. cit.*, p. 61.

[48] George H. Shames, "An Exploration of Group Homogeneity in Group Speech Therapy," *Journal of Speech and Hearing Disorders* (1953), *18*:267–272.

[49] Bingham, Van Hattum, Faulk, and Taussig, "Program Organization and Management," *op. cit.*, pp. 38–39.

[50] Margaret McCausland, "A Public School Speech Program," *The Speech Teacher* (1962), *11*:146–152.

those with the higher levels of verbal behavior might benefit more from "intensive and specific individual sessions."[51]

Learning activities Some of the natural interests of children, around which remedial lessons can be built, have been mentioned above. Any one of these might be the basis for a number of potential units that will stir children to oral activity. Many units can come from interest in the farm—for example, one might be "planting time," another "harvest time," another "winter on the farm," another "taking care of the animals," and on and on. Full advantage, of course, should be taken of current events, classroom studies and activities, sports, holidays, summer trips, community events, and activities peculiar to geographical regions, such as going to the beach, going fishing, hiking in the woods.

It is well to have in reserve activities that allow bodily movement. These help to "break up" a sitting session. Also, they are good to use on those days when the group is restless, excited, or dull. Children can march to the repetition of sounds, beat them out on an imaginary drum, hop forward when they produce a sound or word correctly, backward when they do not. The possibilities are virtually unlimited.

All pupils in group sessions should be kept profitably busy. If the clinician singles out one child for attention to his difficulty, others in the group should be actively listening, observing, responding, or in some way getting benefit from this instruction. Exercises should allow each member of the group to participate as frequently as possible. Games should include all or each should have his own game. The wise clinician sometimes allows individual youngsters to do what he (the clinician) normally would do to help the child in a session. For example, a child who can produce a particular sound correctly may be used to stimulate another child who misarticulates it.

Activity on the part of each child in the group can be encouraged by building a group standard of participation, by leading off the lesson with an individual who is eager to participate and whose enthusiasm will be infectious, by praising a child who

51 Lois Masket Bloom, "A Rationale for Group Treatment of Aphasic Patients," *Journal of Speech and Hearing Disorders* (1962), 27:11–16.

just precedes one who is less interested and willing, by showing a positive expectation that all will participate, and by accepting firmly and positively, yet unemotionally, a child's hesitancy or refusal with replies such as "We will help you," or "We know you will be ready when your turn comes again."[52]

It is extremely difficult to describe in writing, particularly in a book that is highly condensed, the subtleties of procedure, motivation, language, and control used by the experienced, perceptive, and skilled elementary school teacher or clinician. A good one is an inspiration to observe.

APPROACHES TO THERAPY

Approaches to speech therapy are classified, according to one system, as the direct, the indirect, and the psychotherapeutic. We shall be concerned here with the first two because the latter is indicated in relatively rare instances in the public school situation and when it is, it is usually under the direction of the school psychologist or other specially trained personnel. The psychotherapeutic approach should never be used by the speech clinician and the classroom teacher unless they have had the special training that prepares them for this highly sensitive undertaking.

The direct and the indirect approaches to therapy are not separate and individually distinct, for they blend into each other, overlap, and ordinarily are used conjointly. It might be more reasonable to call them emphases in therapy rather than kinds of therapy. They both subscribe to the philosophy that instruction for remediation and improvement in speech and hearing, speaking and listening, becomes meaningful to the individual when offered within the framework of oral communications behavior. The central and all-important process in these approaches to therapy is communication—interpersonal and intrapersonal.

The direct approach In the direct approach to therapy the clinician gives direct and immediate attention to the speech or

[52] See Backus and Beasley, *op. cit.*, for a description of procedures in group therapy, chapter 5; and for specific lesson plans, chapter 7.

hearing problem per se.[53] The specific procedures he is likely to use, relating to each type of speech or hearing disorder, have been outlined in earlier chapters. These procedures are to be adapted and used with due consideration for the more general principles of instruction.

An illustration of how this approach is used to remedy articulation deficiencies may be helpful. If the members of the therapy group have participated in a trip to the local zoo the day before and are still bubbling with excitement about the animals they saw, the clinician, in preparing for the lesson, takes from his files a collection of pictures of animals pasted on cardboard and gets out a box of small animal toys that he has picked up from time to time in dime stores and gift shops. When the children arrive, he starts talking with them about their trip. The conversation is animated and shot through with sparkling interest. If the children are working on *r* and *s*, they may be asked to list orally all the animals that have these sounds in their names; then each child may be asked to tell which animal he enjoyed most, and why; finally, all the children may be encouraged to try to identify the toy animals in the box. All through this process, as necessary, the clinician isolates the sounds and provides ear training and stimulation. The children listen, discriminate, imitate, combine the sounds with vowels, put them back into words in which they were originally used. Perhaps they join in choral speaking in which, in the refrain, the snake goes "sssss" or the lion growls or all the animals are put in the circus:

Unison: The circus is coming to town—
1st child: It will have a bear.
Unison: The circus is coming to town—
2nd child: It will have a leopard. [etc.]

Finally, the pictures of animals are laid out on the table, face down. Each child has his animal (rat, rabbit, tiger, bear, otter, squirrel, turtle, and so forth, for an *r* problem; snake, seal, lioness, lynx, horse, opossum, bison, and so forth, for an *s* problem). Each child, in turn, approaches the pictures, points to one, and says: "I think this is a —— (name of his animal)." After the

[53] For an analysis of various types of direct therapy used in public schools see Chapman *et al., op. cit.*, pp. 61–73.

picture is exposed, he will say: "Yes, it is a ——," or "No, it is not a ——." The name of each child's animal would be a word carrying the sounds that child is working on.

The indirect approach The primary objective in any approach to therapy is to help the handicapped child reduce his problem as quickly, congenially, and effectively as possible. With some children it is possible to move directly to the speech or hearing problem. With other children, this direct approach is not advisable because of certain factors in the child's personality, or in the situation, which must be changed first or which at least require as much attention in the initial stages of therapy as the therapy itself.

In the indirect approach, therapy is conducted within the context of activities of everyday living. Use is made of the natural stimulus-response reinforcement of day-to-day oral communication, extending from the completely nonverbal to the highly verbal. Written, pictorial, and musical forms of communication are used frequently as auxiliary aids. Essentially, the total approach in the beginning is indirect. Then at the appropriate time, that is, when the child is judged ready for them, direct techniques of therapy are introduced. His natural and spontaneous speech and hearing behaviors then become part of the practice material.

Practicing clinicians have devised many variations of this indirect approach to establish favorable remedial climates or to help speech handicapped persons revise their perceptions in specific directions.[54] One technique, particularly usable with children who have not recognized or have resisted social demand for oral communication, requires a special kind of clinician. It requires one who thoroughly enjoys the active play and the running conversation of the child; one who is spontaneously creative in this kind of play and in the use of the child's level of language; one who can very much become a part of a child group; and one who is quite perceptive about the immediate and changing feelings of children.

[54] For some of the ideas incorporated in this procedure, we are indebted to Elise Hahn, "Indications for Direct, Nondirect, and Indirect Methods in Speech Correction," *Journal of Speech and Hearing Disorders* (1961), *26*:230–236.

Units of instruction are drawn from children's general areas of interest and activity previously mentioned. Materials that are related to the unit and that can be *manipulated*—this is important—are gathered. These materials may be blocks, modeling clay, construction sets from a toy shop, dominoes, cardboard, blackboard and chalk, finger paint, inexpensive dime store toys, such as cars, farm implements, animals, furniture, miniature store equipment, dolls and doll clothes, or similar articles that can be used in an active way to carry out the plan of the unit of instruction.

When the children arrive, the clinician probably has already piled up pieces of construction material before him, with a building just started. He pulls the children into the activity: "Hello, Karen. Hello, John. I've just started to build a store." The children sit on the floor, immediately interested. The clinician continues to build, talking about what he is doing and speaking out his feelings about it: "Let's see, maybe we should have a window here. I think a big one would be nice, don't you Karen?" "What do you think, John?" Thus he draws the children into communication, agreeing, disagreeing, suggesting, helping, explaining. "John, where do you think the doors should go?" John points. "I didn't hear him say 'there,' did you, Karen?" "Oh! He can say it." The clinician begins to repeat, "A door should go there. A door should go there. A door should go there." The children fall into the language play, imitating the clinician, saying the words in chorus with him. "John, where do you think the counter should go? Can you say 'counter'?" John tries. The clinician, for a moment, slips into direct therapy. "That *r* on the end of 'counter' is made like this." He produces the *r* sound several times. "Try it." "Good." "Now, for fun, try it again." "Good. Now let's put it on the end of 'counter.'" "Good! Now where does the counter go?" John says, "There." The clinician plays with the word, drawing in the children. "There–there–there–there–the counter goes there." "Now we need a cash register. Can you say 'cash register,' Karen?" Thus it goes. The children are drawn into oral communication. They find it satisfying. Their verbalizations are rewarded and reinforced by the approval of the clinician and by the responses of the other children. Direct correction, inserted into the conversation easily and naturally

by the clinician, is accepted as a part of pleasant, purposeful, and rewarding activity.

Creative dramatics is a teaching device much used to encourage creativity and independent thinking and also to provide the experience of teamwork. It has tremendous possibilities, in addition, for use in the constructive adjustment of behavior as well as in the improvement of speech skills per se.

In this form of group activity, children act out meaningful experiences, creating their own dialogue and action. Usually the experiences are carefully chosen by the clinician with the needs of individual children in mind. They may revolve around classroom or playground activities like helping teacher or organizing a baseball team. They may touch upon simple social activities, such as going calling with mother. They can enable the child to anticipate and prepare for situations like going to the dentist. They may be built around Mother Goose rhymes, fairy tales, poems, riddles, legends, myths, and adventure stories that contribute to the clinician's purpose.[55]

Planning The retraining program for the child who has a speech handicap is based upon the information gathered and the inferences drawn during the examination-evaluation procedures. The details, in fact the direction, of the program will depend a great deal on the goals the clinician sees as reasonable for the particular child with the particular speech problem in a particular environment.

LONG-RANGE PLANNING FOR THE INDIVIDUAL OR GROUP. As his first act after the examination-evaluation, the clinician outlines —at least in his mind—a long-range program for each child. Such a program aims, first, to lead the child from his present condition into a certain goal region in regard to oral communication.[56] This goal region is to be defined for each child with due consider-

[55] For more elaborate explanations, see Ruth Gonser Lease and Geraldine Brain Siks, *Creative Dramatics in Home, School, and Community* (New York: Harper & Row, 1952); Winifred Ward, *Playmaking with Children from Kindergarten to High School* (New York: Appleton-Century, 1947); Siks and Hazel Brain Dunnington, *Children's Theatre and Creative Dramatics* (Seattle, Wash.: University of Washington Press, 1961); Burdette S. Fitzgerald, *World Tales for Creative Dramatics and Storytelling* (Englewood Cliffs, N.J.: Prentice-Hall, 1962).

[56] Backus and Beasley, *op. cit.*, especially chaps. 1, 2, and 3.

ation for his limitations as well as his potentialities. Some children can be expected to arrive at intelligibility, some at adequacy, some at almost, but certainly not complete, perfection—absolute fluency and perfect speech for child or adult are, of course, not only highly unlikely but practically impossible.

The long-range program aims, second, at self-realization for the individual. In other words, it aims to develop a mature, self-directing, responsible individual who feels some degree of security, some sense of belonging, and a pleasant amount of acceptance.

The long-range program aims, third, toward the development of the child as a member of a family and community group, as a producer and consumer, and as a good citizen. Improvement in oral communication, in turn, contributes to the youngster's capacity to function in these various roles. The child benefits greatly if the clinician keeps these other aims specifically in mind and uses materials and techniques that contribute to their achievement as well as to the improvement of speech as such.

The total program, then, is to provide for the child a progression of experiences designed to lead him from his present condition into his goal area of improved relationships and behaviors, not the least of which is oral communication. Once the clinician has planned the program, he sets about selecting the most effective procedures, adjustive techniques, practice techniques, and instructional materials to implement it. A most important part of the planning is this selection of the proper tools.

LESSON PLANNING. The remedial lesson provides one experience for the child in that progression of experiences that make up the long-range program. As an integral part of that program, it should move the child a little closer to his goal region. It is to be planned carefully in advance of actual instruction.

Lesson planning is productive beyond the outline of a lesson as such. It enables the clinician to move with sureness and confidence into the instructional situation; when he is sure and confident, the child is likely to feel so, too. Lesson planning increases the clinician's efficiency because it provides a known framework for the activities and so eliminates much waste motion, uncertainty, and marking of time. Perhaps its most important function, however, is to encourage the clinician to focus

his reasoning powers, insights, and creative imagination on a given problem in the quiet of his office or room, away from the distractions that thrust themselves into the daily schedule of instruction.

Plans once made can be and often should be abandoned for the inspiration of the moment. When this occurs, planning has not been unnecessary or unprofitable. "Inspiration" or "spur-of-the-moment" ideas that are worth anything are usually the product of careful preliminary thought; the mind that has not played with a problem rarely, if ever, strikes suddenly upon a method of solution. Planning need not be done on paper, although written plans do have the advantages of reminding the clinician of his insights and of reassuring the administrator. Whether written or mentally noted, they should not stand in the way of sensible changes and adaptations to the child's responses or to other conditions as they occur. Each lesson may not cover all these points, since some are over-all considerations, but in a completely prepared lesson plan there will be answers to these seven questions:

1. What is the clinician's major objective; that is, what is the goal region he sees for a particular pupil? Is that region limited to the development of adequate fluency or phonetic accuracy? Or does it include achievement of some measure of self-realization, social skill, group membership, and citizenship? Typical major objectives might be to help the child develop self-confidence in social situations which include authority individuals; to help the child attain a feeling of status in groups of his classmates; to help him develop the ability to use the *t* sound in all positions in connected speech in school and home situations; and while he is learning to make that *t* sound, to teach him to adopt an easy, simple pattern of disfluency when he talks to his friends outside the speech room. Other objectives for children with speech problems are presented in Chapters Three through Eight.

2. What will be the pupil's immediate objective? The pupil's immediate objective and the clinician's lesson objective become the same when the pupil is aware of his own need, when he is impelled for one reason or another to improve, and when he recognizes that the accomplishment of the day's lesson is a neces-

sary and important step toward the series of subgoals which he and the clinician have established to guide their work. Ordinarily, however, the child's immediate objective is not nearly so clean-cut. To the clinician, it might seem that the immediate next step would be to combine the *l* sound with vowels. For the child, the immediate need is to achieve a feeling of success. Therefore the clinician must tie together his perception of need and the child's perception of need and tell the group, "We will give Mary a chance to earn the first gold star today." Mary is successful. She receives the star and the applause of the group. Both the child's needs and the clinician's needs are met, and the child happily moves forward toward the major objective.

The clinician's concerns here are the drives, motives, and wants of the child that are likely to impel him in the direction desired. Once these forces are identified, the clinician is in a position to turn them in the direction of speech and hearing reeducation. The child's desire for recognition and status, for example, might be met by appointing him "teacher's helper" for the period. The consequent stimulation is likely to carry over into his practice efforts in speech.

3. What is the lesson objective? A lesson objective is the desired result of any one remedial session. It is stated in terms of the individual child or of each individual child in the group and of the group as a whole. It answers the question: "What is the immediate next step that must be taken in order to move the child closer to the major objective?" Obviously, the lesson objective must be one which the child, with some effort, is likely to be able to achieve. It is most important that he have successes and that these successes be reinforced. Lesson objectives are often stated in such terms as these: to allow release of aggressive tendencies; to produce *s* in isolation; to secure transfer of *s* into commonly used words; to eliminate a child's eye-closure habit; to improve activity of the soft palate; to teach the child to discriminate between *s* and *th;* to strengthen the production of *s;* to teach the child to imitate his own stuttering; to have him engage in negative practice of his defective *s*.

4. What procedures are to be used? The procedures used in the training session will depend, of course, on the immediate

objectives of both the clinician and the child. For example, if they are concerned with some phase of ear training, then the techniques will be ear-training techniques; if stuttering, then stuttering techniques; and so on. Some of these techniques are relatively well established; some have been described in preceding parts of this book; others must be devised by the clinician on the basis of his understanding of the nature of speech and hearing disorders and of the basic principles and methods of correction and in terms of the specific purposes he wishes to accomplish.

The clinician may find the following questions useful in planning the procedure for a particular session: What school or extracurricular activity is the child engaged in at present that is of great interest to him? Does he have other strong immediate interests? If so, how can the lesson be related to those activities and interests? What is the attitude of the child toward his speech lessons? If the attitude is negative or apathetic, how can the lesson be directed to satisfy his normal drives and wants? What was the previous lesson? Is a review of it necessary? Will the child recognize the relationship between this activity and the activities that he normally engages in on the playground and in the classroom? Will he profit by an explanation of the probable causes of his problem and the steps proposed to correct it? Should he listen to a recording of his speech? If so, what precisely is he to listen for? Will it help him to observe the movements of his lips in a mirror in attempting to produce a particular sound? What technique can be devised that will result in getting Bob's hands away from his mouth? Should John read in chorus with Betty? How can Jim be encouraged to help plan his next lesson? How can variety of procedure and material be introduced in this lesson? What procedures are to be used if the interest of the child wanders away from the lesson? How is the lesson to be summarized to clinch its point? What can the clinician do to get the child to anticipate and look forward with eagerness to the next lesson?

5. What materials are to be used? The materials used in speech and hearing therapy depend not only on the nature of the problem and the child's ability and maturity, but also—and in important ways—on his interests. Practice on sounds, words, and sentences, for example, is much more effective when it involves

real-life situations than when it is limited to word lists and relatively meaningless sentences. Therefore it should include such activities as asking and giving directions, carrying messages, telephoning, expressing appreciation, conversing, asking favors, extending, accepting, and declining invitations, greeting others, shopping, and reporting. Typed transcripts or sentences taken from a child's own conversation make good practice material. If play is the basis of training, the natural choices of children should be considered. Kindergarten play equipment, for example, should include raw materials (such as clay, large floor blocks, wood, printing materials), pattern toys, housekeeping or doll-corner equipment, locomotive toys, and simple picture books. Collections of children's poems and stories, illustrated dictionaries, mail-order catalogs, and collections of mounted pictures are useful. Reading selections should relate to the natural interests of the youngster at his particular level of maturity. Boys of 12, for example, are particularly interested in biography and history as well as stories of adventure, athletic prowess, inventions, mechanics, scientific research, and industrial processes. Girls of the same age are particularly interested in biographies of women as well as stories of home life, school life, and nature.

6. What means of evaluation is the clinician to use? How can he and the pupil arrive at an evaluation of performance? Should the group comment on the progress of individual members? Should the pupil attempt to evaluate his own performance? Should today's lesson be recorded and compared with a recording made previously? Should some kind of tabulation be made of the correct responses in today's lesson to see whether there are more than the number counted last time?

7. What should the pupil do between this meeting and the next? The answer to this question will depend, first, on the frequency with which the child is scheduled to meet with the clinician for special work; second, on the training of the parents —usually the mother—in speech or hearing remediation; and, third, on whether it is possible to make an assignment the child can or will do successfully. The child should probably have no interim assignment if he is scheduled for remedial work two or three times a week or if the mother has no training in remediation or if the assignment that would be reasonable in the lesson

progression is such that he could not, or likely would not, do it. However, if the clinician is meeting the child only once a week, is training the parent at the same time, and can devise a lesson that the child can, and probably will, do, then an interim assignment may be advisable. The mother might be given one or two lessons, for example, and she would be asked to do these with the child at home at spaced intervals. The clinician might outline the lessons to her during a personal conference or might write the information in the speech notebook the child carries home to her.

RECORDS AND REPORTS

Records Essential record keeping is not busy work. It is a necessary and useful tool in the efficiently conducted speech retraining program. Through carefully kept records, the clinician preserves and organizes the bits and pieces of information he collects concerning the children with whom he works and concerning his program as a whole. Such information then is available for reference and review during the therapy period of a given child, during evaluation of the program, during preparation of reports for the school administrators, or during any like activities involved in an ongoing program. And good record keeping is a particular help to the child with a speech problem who must move to another school. If a complete and concise record describing his problem and detailing his retraining can go with him, his chances of being well-placed for continuing training are enhanced.

The record-keeping system of the clinician should include individual case folders, individual case cards, and, when appropriate, individual recordings cards. The case folders are necessities; the case cards frequently save time and effort; the recordings cards are useful if the tapes are preserved.

INDIVIDUAL CASE FOLDERS. The individual case folder is a letterhead-size heavy-duty manila folder, identified by the name of the child, the name of his school, and his grade. In it are kept eight kinds of records: a cumulative record; a case history; his medical and dental reports; testing results (psychological, audiometric, and so forth); autobiographies, descriptions of home and com-

munity environment, observations of behavior; records of conferences with parents, classroom teachers, and others; carbons of reports to parents, classroom teachers, and others; and lesson plans or log sheets, or both, kept in sequence.

Cumulative record. The cumulative record is a summary of work the clinician and other members of the problem have done with the child from the time of his first speech examination. An 8½-by-11 card is often used for this record, with spaces ruled for these eight headings:

1. IDENTIFICATION:
 name, sex, date of birth, names of parents, home address, telephone number
2. EDUCATION:
 school, grade, room number, name of teacher
3. SPEECH TESTS: HEARING TESTS:
 brief description of problem or problems, test results, name of the examiner
4. OTHER TESTS AND OBSERVATIONS:
 results of audiometric, intelligence, personality, reading, and scholastic achievement tests
 bodily abnormalities possibly related to the speech problem
 bodily abnormalities possibly related to other behavior
5. SPEECH RECORDINGS:
 type, date, file number
6. HEARING AID:
 type, make, date fitted
7. REMEDIAL RECORD:
 semester or year, number and length of lessons, types of remedial procedure, results, remarks, signature of the clinician
8. END OF YEAR OR DISMISSAL STATEMENT:
 dismissed: speech or hearing condition upon dismissal
 inactive: reason, recommendation
 retained: speech or hearing condition at the end of the year
 recommendation:

Most school systems keep a complete record (also called a cumulative record) of personal data, grades, attendance, test results, illnesses, and activities of each pupil from the time he enters school until he is graduated. From it is taken information

requested by universities and colleges, prospective employers, and the armed forces, as well as by individuals, agencies, and institutions that need confidential information about the individual. The clinician will contribute information about the nature and severity of the speech problem of the child as well as a brief statement covering results of corrective work. The school cumulative record for a child can be an invaluable aid to the speech clinician in the preparation of his case history.

Case history. The case history has been considered in this as well as in preceding chapters.[57] For obvious reasons, it appears next in sequence in the individual case folder. In preparation of the case history, consideration is given to items that fall roughly into 11 categories (for any given child only needed information is recorded):

1. IDENTIFICATION: (same as on cumulative record)
2. COMPLAINT: (as stated by the individual or by the referral source)
3. REFERRED BY: (self, other individual, agency)
4. SPEECH PROBLEM: brief description of problem (written in terms of what the pupil does and does not do), history of the speech difficulty, attitude of the child toward the difficulty, attitudes of others toward it
5. PERSONAL HABITS: attitudes toward others, self, and situations, cooperation, temperament, delinquency, social traits, work habits, leisure activities, play, sleeping and feeding habits
6. ENVIRONMENT: socioeconomic status of family (estimate from occupation, education, vocation, home of parents), neighborhood, parents' interests and activities, parent-child and sibling relationships, discipline practices, bilingualism in home, companions, relatives
7. MENTAL AND EDUCATIONAL DEVELOPMENT: present school and grade, previous schools, age entered, past progress and achievement, attendance record, subjects causing difficulty, language problems, playground problems, teacher-child relationships, parent-teacher relationships, special talents, special interests
8. FAMILY HISTORY: names and ages of parents, occupation of

[57] For a comprehensive explanation of the preparation of case histories see "The Case History," in Johnson, Darley, and Spriestersbach, *op. cit.*, pp. 23–73.

parent or parents, siblings, family deficiencies (speech, hearing, reading, mental, emotional), family traits, attitude toward child, attitude of parents toward each other, previously attempted speech correction, same information on immediate relatives

9. MEDICAL HISTORY: diseases, injuries, inoculations, health problems
10. DEVELOPMENTAL HISTORY: birth date, breast or bottle feeding, bladder and bowel control, toilet training, sleeping and feeding problems, height and weight gain, age of sitting up, walking, talking, teething, dressing, and feeding self, dental care, handedness, coordination
11. OBSERVATIONS FROM INTERVIEWS WITH PARENTS, CHILD, AND OTHER MEMBERS OF THE PROBLEM: rapport with child, his language behavior, his expressive movements, his emotional reactions, rationalization, unconscious projection

Medical, dental records. The clinician's request for a medical or dental examination of a child is to be accompanied by a form which specifies the information wanted.

Test results. Most psychological and other tests have their own summary or report forms; the results of any one test can be noted on the cumulative record and the report filed in the child's folder for any future use. Audiograms have been discussed in Chapter Eight.

Autobiographies, descriptions, observations. Autobiographies by older children are sometimes helpful in searching for psychological factors related to speech or hearing handicaps. Written descriptions of the child's home and community environment, particularly those that have to do with interpersonal relations, are valuable for diagnosis, and particularly so if it becomes important to review and reanalyze speech or hearing problems that are not yielding easily to remedial work. The same may be said about descriptions of the child's behavior in certain situations and under certain circumstances.

Records of conferences. Notations should be made about all but the most incidental conferences with parents, classroom teachers, and classmates; observations of these people relating to the child or his handicap which appear insignificant at the

moment may take on greater importance as one pushes deeper into the child's problem and as remedial work progresses.

Carbons of reports. It is wise to keep carbon copies of all reports on the child for future reference.

Lesson plans, logs. Lesson plans, as discussed in the previous chapter, should be kept in sequence in the child's folder. Some special teachers like to carry a loose-leaf notebook in which is inserted a page for each child. These have come to be called "log sheets." Each child's sheet is headed with the necessary identification (name, grade, room number, classroom teacher, remedial group number, and meeting schedule). Under the date of each meeting is written the lesson plan for the day, an evaluation of the plan after it is used, and reminders, comments, and observations that will perhaps be useful in future lessons.

The individual case folder remains, ordinarily, in the clinician's files until the child has been dismissed permanently from special speech work. The folders are finally stored where they can easily be examined. The classroom teacher who works with speech handicapped youngsters in her own room also keeps individual case folders. At the end of each school year, she deposits each child's folder with the school principal, who passes it on to the proper teacher at the beginning of the next school year. If the folder has been kept as suggested, the new teacher will be able to review quickly the status of the problem and continue remedial work without delay.

INDIVIDUAL CASE CARDS. A file card for each child sometimes saves time and energy for the speech clinician. Such cards allow for quick counting in making reports, and they are convenient sources of names, addresses, telephone numbers, and other information.

Individual case cards may be printed or mimeographed. The following form has been found convenient and practical:

Name School Grade.....
Home address
Telephone Birth date Date of examination
Description of problem
.....
Recordings: date, file number, type

Disposal of case: referred to
Receiving correction Corrected and dismissed
Corrected, follow-up
Other disposition

There are various methods of organizing the card file. Ordinarily, the cards are filed alphabetically under three divisions: active cases, follow-up cases, and inactive cases. Clinicians who work in several schools often partition the file into sections for each school; each of these sections is then subdivided into the active, follow-up, and inactive divisions. A distinctively colored card may be used for each school.

INDIVIDUAL RECORDINGS FILE. If speech recordings are made and stored, then a recordings file is helpful. A card is prepared and filed alphabetically (by last name) for each child's speech recording. On the card are the child's name, filing number of record, date of recording, and speed of recording; then on each recording is pasted a label on which is written its file number, the name of the child, the date, and the speed. The recordings are stored in numbered sequence.

Reports Reporting is as essential as record keeping in a continuing program of speech therapy. Through reports administrators are informed of the need for corrective work; through reports parents and teachers are informed of the nature, causes, and consequences of speech problems; and through the discipline of preparing reports the clinician enjoys an opportunity to assess his own work in the light of the activities he is reporting. His reports are of two kinds: instructional and administrative.

INSTRUCTIONAL REPORTS. Instructional reports, directly concerned with the reeducation of particular children, are of four kinds: enrollment reports, evaluative reports, progress reports, and dismissal reports.

Enrollment reports. The enrollment report is sent to the parents, with a copy to the child's classroom teacher. Usually this type of report is issued as a form letter, telling the parents briefly about the program, the days and the time at which the child is scheduled for corrective work, the need for a conference with the mother or both parents, how that conference will be

arranged, and where and when the parents can contact the clinician if this is desired. This report is professional in tone, friendly, never alarming. (Before a final form is chosen, it is a good idea to get reactions to the report from a number of parents who are honestly critical.)

Evaluative reports. The evaluative report is substituted for the enrollment report when parents, classroom teachers, and others will be participating actively and on a planned basis in the remedial work with the child. It is prepared as soon as the speech examination has been completed and the findings have been evaluated. Ordinarily it contains four kinds of information: the usual identification items; a description of the child's problem; explanation of remedial procedure suggested by the original analysis of the problem and statements as to what the parents, the classroom teacher, and others can do to help with the remedial work; and a tentative prognosis or brief statement of possible results of remedial work. This prognosis or prediction cannot be stated exactly; it is never, under any conditions, to be given in the sense of a guarantee; it is useful, however, as an indication of the time and work likely to be required and the results reasonably to be expected insofar as can be predicted, "other things being equal" and "circumstances permitting."

Progress reports. Ordinarily, clinicians feel that it is important to send progress reports to parents who are not assisting actively, on a planned basis, at regular intervals, in the remediation effort. Usually, copies of these reports are sent to classroom teachers and others who are concerned in one way or another with the child's problem. Some clinicians use a checklist which can be filled in quickly and which indicates the child's rate of progress. Others prefer to use a brief letter; this allows for considerable flexibility in reporting, and it can be as informal or confidential as circumstances indicate. Ordinarily these progress reports are issued at the times when classroom teachers send out what are commonly called "report cards," although some clinicians feel that it is wise to keep reports on remedial progress sharply separated from other types of reports sent to parents.

Before leaving this topic we want to emphasize the point that "grade" reports of progress in remedial speech work are certainly not advisable. Even the "satisfactory" or "unsatisfactory"

type of report is to be questioned. In remedial activity, grades, marks, and evaluations do not provide the kind of motivation desired; rather, they may weaken or distort the desired type of motivation. Perhaps there are some parents who should not receive a progress report; it may influence them, consciously or unconsciously, to subject the child to pressure. Perhaps, in most instances, parents will be adequately informed if they know that "Mary is progressing as rapidly as can be expected" or that "Mary, in the past few weeks, has learned to produce the *s* and *r* sounds correctly."

Dismissal reports. A dismissal report ordinarily is issued upon permanent or temporary termination of remedial lessons. Copies go to the parents, the classroom teacher, and others who are involved in the remedial work. The report may take the form of a brief note or checklist on which appropriate comments are marked. In any case, the person who receives the report should know whether the dismissal is permanent or temporary, the condition of the child's speech or hearing upon dismissal, the reasons for dismissal if it is temporary, and when work may possibly be resumed.

ADMINISTRATIVE REPORTS. Ordinarily, speech clinicians make three types of reports to their administrative officers: survey reports, periodic reports, and annual reports. Other types may be necessary, but these are representative.

Survey reports. The tabulated results of the case-finding survey, described earlier, are presented in the survey report. For each room surveyed, an alphabetical list of pupils is prepared. Alongside each name is typed an appropriate comment, such as "no speech problem," "stuttering," "*th* for *s* substitution"; occasionally there may also be notations concerning other difficulties (such as problems in vision or reading observed in the child). Included also is "recommended disposition," with such entries as "referral to nurse," "referral for psychological test," "parent conference," as well as "speech therapy." Three copies of the report for each grade are prepared. The clinician retains the third copy in his files. The second is presented to the classroom teacher most vitally concerned with cooperating in the program—in most elementary schools this is the room teacher, and in secondary schools it may be the homeroom, speech, English, or social

studies teacher. The original copies for the various rooms are stapled together with a summary sheet on top; these are submitted to the principal. The summary sheet is made with three carbon copies so that these additional copies can be stapled together to provide the superintendent, assistant superintendent, or supervisor of special education with a composite summary which tells him at a quick glance the need for remedial work in the system at large.

The summary sheet for each school as well as the composite summary sheet for the school system as a whole (or the grades surveyed) itemizes:

1. Total number of pupils examined
2. Total number of children who have problems in oral communication
3. Percentage of pupils who have problems in oral communication
4. Breakdown of total problems into the numbers of cases to be classified respectively as:

	BOYS	✓	GIRLS	✓	TOTAL
a. Articulation					
b. Voice					
c. Stuttering					
d. Retarded speech					
e. Cleft palate					
f. Cerebral palsy					
g. Hearing loss					
h. Other					

Periodic reports. Another type of administrative report, commonly called a periodic report, is brief and covers a four-week, six-week, or nine-week period of instruction. Usually, when administrators need a report of this kind they are mainly concerned with some or all of these nine items:

1. Number of pupils receiving corrective work at the beginning of the period
2. Number of pupils receiving corrective work at the end of the period
3. Number of pupils dismissed as corrected during the period

4. Number of pupils not dismissed as corrected but discontinuing corrective work during the period, their names, and reasons for dropping
5. Number of pupils added during the period, their names, and types of problems
6. Number of pupils aided by welfare or service organizations or clinics during the period, their names, and kind of help received by each
7. Number of home calls during the period
8. Number of conferences with parents at school during the period
9. Number of meetings with parent groups during the period

Annual reports. The third type of administrative report is that made at the close of each school year. This annual report is especially important since it is designed to provide the superintendent with an exact picture of the nature and progress of the program. Also, it contains information that he needs in order to justify the cost of the program to the board of education or to obtain financial aid from the state. In it are included requests which will involve expenditures that the superintendent can include in the estimated budget for the year to come. Even if the superintendent does not request an annual report, it is advisable to give him one. The report should be sent, of course, through proper channels and should be signed or approved by each person in line. Ordinarily, it contains the following items:

1. An introductory page which explains the nature and purposes of the program
2. An over-all statistical tabulation of corrective work which itemizes:
 a. Total number of pupils examined for speech deficiencies
 b. Total number of pupils examined for hearing loss
 c. Total number of pupils receiving speech correction
 d. Total number of pupils receiving assistance with hearing
 e. Total number of pupils on waiting list for remedial work
 f. Total number of pupils dismissed with acceptable speech
 g. Total number of pupils with hearing problems dismissed
 h. Total number of pupils dismissed with problem uncorrected

i. Total number of pupils referred to other specialists or agencies
j. Total number of pupils who received aid from welfare or service organizations (specify)
k. Average pupil load per month
l. Number of lessons for each pupil or group per week
m. Average length of lessons

3. Classification of speech problems of children receiving assistance:

	BOYS ✓	GIRLS ✓	TOTAL
a. Articulation			
b. Voice			
c. Stuttering			
d. Retarded speech			
e. Cleft palate, cleft lip			
f. Aphasia			
g. Other			

4. Classification of hearing problems of children receiving assistance:

	BOYS ✓	GIRLS ✓	TOTAL
a. Lip reading instruction			
b. Hearing aid instruction and auditory training			
c. Speech training			
d. Classroom aid (specify)			

5. A tabulation of supplementary work which itemizes:
 a. Number of demonstration lessons taught for classroom teachers
 b. Number of hours devoted to work with classroom speech improvement program in a planning, supervisory, or actual teaching capacity
 c. Number of hours devoted to young child program, and the specific activities
 d. Number of speeches delivered to community groups
 e. Number of faculty meetings at which discussions were directed or demonstrations held
 f. Number of home visits made
 g. Number of parent training sessions conducted
 h. Number of parent study group sessions held

i. Number of parent conferences held at school
j. Number of visits made by parents to remedial classes
k. Number of conferences held with doctors, dentists, welfare supervisors, and others
l. Other

6. Explanation of the progress made in developing the program for speech and hearing handicapped children, and explanation of the difficulties encountered
7. Recommendations concerning organization and administration of program in the future
8. Requests for assistance, equipment, teaching aids, and supplies for year to come (itemized, with estimated cost of each)

A FINAL WORD

Although this book has been addressed primarily to the prospective as well as the working speech and hearing clinician and classroom teacher, it has been written for many others, too—the school administrator, social worker, psychologist, dentist, physician, and parent—in fact, all members of the problem.[58] It could not be otherwise; the efforts and objectives of one are the labors and aims of all. Each is dedicated to the task of safeguarding and teaching American children. Since the ideal is to assist each child in the realization of his own potential, a very special responsibility inheres in the situation when the child is handicapped; this is especially so when his handicap affects that most human of all his talents, the ability to use spoken language to communicate with those around him. It is the purpose of each dedicated mem-

[58] Because of its specialized nature, the subject of working with speech handicapped children in a hospital setting has not been discussed in this chapter. Those who would like to explore this area of growing importance may be interested in reading James Robertson, *Young Children in Hospitals* (New York: Basic Books, 1958); the following articles: Herold Lillywhite and Richard L. Sleeter, "Some Problems of Relationships between Speech and Hearing Specialists and Those in the Medical Profession," *Asha* (1959), *1*:127–131; Lillywhite, "Organizing a Hospital Program for Communicative Disorders," *ibid.* (1961), *3*:139–143; Lillywhite, "Opportunities for Clinical Training in a Medical Center Speech and Hearing Clinic," *ibid.* (1961), *3*:237–239; Raymond Carhart, "Speech Pathology and Audiology," *ibid.* (1960), *2*:99–102; Isaac P. Brackett, "AMA Committee on Relationships of Medicine with Allied Health Professions and Services," *ibid.* (1960), *2*:181–184; and Daniel R. Boone, "The Use of Volunteers in the Speech Pathology-Audiology Clinic in the Medical Setting," *ibid.* (1964), *6*:284–286; and also relevant material in the two professional journals called *Exceptional Children* and *Young Children*.

ber of his problem to see that he is attuned as happily as possible to our way of life and that he is encouraged, in large matters and small, to grow creatively and productively, so that he may become a contributing citizen of his society.

From the first page to the last, this book has pleaded for principles of teaching—"common denominator" principles—that are good for all pupils. Pupils are people. As people, they need to live and work and play under conditions that inspire and stimulate natural and normal development in skill, attitude, appreciation, and understanding. As people, they are engaged in a constant search for security, a sense of belonging, and pride of achievement. It is important that the home and the school satisfy their continuing quest. Pupils as people are individually different in background and ability and need. These differences will be recognized as a challenge in the enlightened learning situation.

The superior speech clinician tries to learn more and more about the human resources with which he works. He combines the use of good method with a personality that is attractive to the youngster. He begins his instruction on the level of the child's experience, interests, and needs. He uses techniques that allow for friendly, varied, socialized, individualized, and guided learning. He is purposeful, prepared, clear, helpful, and patient. He adds to teaching methods those human, companionable, and sympathetic traits that make learning an exciting adventure for children.

The superior speech clinician is among those who try to understand the complexities of man as he seeks to increase his insight into the whys and wherefores of human behavior. He appreciates the futility of trying to help pupils achieve significant growth of any kind while they are suffering from serious feelings of inferiority or anxiety or inadequacy. He understands that the child who stays in at recess or sits rigidly in the back row needs as much attention as the child who is overaggressive or belligerent. He searches long and deeply for causes of handicapping behavior. He longs to do and he does do something constructive for those pupils who seem always on the perimeter of classroom activity and are never drawn into the exciting adventure of working and playing with their fellows. He knows, on the one hand, that inadequacies in speech may cause unfortunate behavior patterns

and, on the other hand, that pleasant, comfortable speech can give joy abounding. He becomes, in deeply meaningful ways, a member of each child's problem.

Through all this, he makes of himself a vital and enriching force not only to the children with whom he works but also to the people of his community. The best of instruction is achieved through teaching by example, and the kind of teacher here described is one who, by example, teaches the most treasured personal qualities that any child may acquire in or out of school.

APPENDIXES



I

PROJECTS FOR STUDENTS

1. Make a speech survey of an elementary or secondary school classroom and submit a typed report on the speech problems discovered.

2. Observe six speech correction lessons and, on the basis of a set of criteria drawn up for yourself, report on your observations.

3. Visit a speech clinic. Before the visit, prepare a list of the equipment, procedures, types of problems, etc., that you wish to see demonstrated. After the visit, make an oral or written report on your more important observations.

4. Visit an elementary school classroom. During your visit note (a) teacher personality, (b) classroom atmosphere, (c) methods used to enhance learning, (d) methods of motivation, (e) classroom "management," (f) teacher-pupil relationships, (g) opportunities for remedial work in speech. Report on your observations.

5. Prepare a list of what you think are "common denominator" principles of classroom teaching. Visit an elementary school classroom, observe the teaching being done, and prepare a written report which explains how these principles were fostered or violated in that classroom.

6. Select the names of six pupils with speech problems from an elementary school enrollment. Confer with the principal and teachers, if they are willing, about conditions which would affect the scheduling of these pupils for special speech classes.

7. Make a thorough investigation of the speech correction program in your state, covering (a) a description of the state program, including the activities of state-supported and private agencies, (b) a description of the services provided by college and university clinics, and (c) a list of the communities providing speech correction in the schools or under some other auspices.

8. Prepare a series of lesson plans covering some phase of the retraining process for a particular child who has a speech difficulty. Your instructor will probably designate some specific aspect of retraining which you should outline. The lesson plans should be prepared for an actual case, but if necessary a hypothetical case may be set up.

9. Interview the superintendent of schools in your county or city and prepare an informative report of services offered to speech handicapped children.

10. Interview an in-service speech clinician. Obtain advice concerning a program of studies which will adequately prepare you for active service in a school system.

11. Looking toward future study and activity, draw up a plan which will enable you to obtain a thorough knowledge of children. Your plan should include courses you will take, books you will read, observations you will arrange, and vacation activities in which you will engage.

12. Set up a "truth session" with a group of your fellow students. Quietly, objectively, and unemotionally, talk about your personal strengths and weaknesses as potential speech clinicians.

13. Visit a public school class in which you are likely to find considerable speech activity. From your observations, write a short paper in which you expound on the opportunities for remedial speech work in the ordinary classroom.

14. Prepare the following for evaluation by your instructor:
 a. A form letter which requests permission of the parent to take a child out of regular classroom work for remedial speech instruction.
 b. A letter which asks a parent to visit the school for a conference about a speech handicapped child.
 c. A 12-minute radio talk explaining to parents the nature of the public school program of speech correction.
 d. A five-minute television presentation of the information in *c*, above.

e. A newspaper item giving the information in *c*, above.

15. Arrange to listen in on and observe a speech clinician's conference with a parent. Write a report in which you explain the techniques used, the strengths and weaknesses of the conference, and apparent results.

16. Do the necessary library research and other investigation and prepare a paper in which you offer:

a. Suggestions for the conduct of face-to-face group discussions for parents of speech handicapped pupils.

b. Suggestions for the conduct of a panel or symposium discussion involving parents.

c. A list of audiovisual aids (including essential data on the producer and the cost) which can be used with parent study groups.

d. A list of pamphlets, manuals, case study books, textbooks, and articles that could be recommended for use by parent study groups. Remember that these materials must not be too technical and that they must contain adequate orientational information.

17. Observe several "case conferences" involving a speech clinician, classroom teachers, psychologists, and others. Report on the special services represented and the contribution of each to an understanding of the child's problem.

18. Interview a public school speech clinician and obtain information about problems and procedures in over-all program planning, locating the student with a problem, and preparing a schedule of remedial work.

19. Observe an instance of examination-evaluation of a speech handicapped child. Provide the class with a "play-by-play" report in which you resist any tendency to interpret, infer, or evaluate. At the end of your report, engage in group discussion in which the class as a whole arrives at reasonable interpretations, inferences, and evaluations.

20. Prepare a list of tests that might be used by a speech clinician for the purpose of examination-evaluation. Include essential information that would be needed in obtaining copies of these tests. Under each test, write a paragraph explaining its purpose and use. Keep in mind the matter of age levels.

21. Observe an instance of examination-evaluation. Do the job of "inference" on your own. Compare your work with that of

the clinician who conducted the examination. Report on the entire process, laying stress on what you learned.

22. Read a textbook which explains in some detail the process of group therapy. Report to the class on the major premises that might well guide the thinking of speech clinicians in using this technique.

23. Read at least six selected articles or a selected book and report on the use of one of the following in speech therapy:

a. Group activity.
b. Sociodrama.
c. Creative dramatics.
d. Play therapy.

24. Select one of the remedial procedures mentioned in this book. After considerable supplementary reading, prepare a report in which you explain, with examples, how it can be used by the speech clinician.

25. Select a particular child who is attempting to remedy his speech. Study the records on the child. Prepare a plan for each of his next six lessons or remedial sessions.

26. Build a speech correction kit in which you include books, tests, games, and other materials you will want to have immediately available for work with elementary school children. (Don't forget such items as cleansing tissue.)

27. Make a thorough study of the information contained in an "individual case folder." Report on the strengths and weaknesses of the records kept in this particular instance.

28. Observe disfluencies in the speech of several nonstutterers —classroom lecturers, professional public speakers, members of panel or round-table discussions, and speakers selected at random in ordinary dinner-table situations, conversation, class discussions, in stores, shops, etc. Observe spontaneous or essentially extemporaneous speech. Oral reading or speeches delivered from detailed notes will not be relevant, except possibly for comparative purposes.

The disfluencies will occur in the form of interjections, such as "ah," "er," "um," throat clearings, etc.; repeated parts of words; repeated whole words; repeated phrases; prolonged sounds, usually initial or final sounds of words; revisions; incomplete phrases; and broken words. You may also want to count conspicuous pauses.

Tabulate, as you listen, the number of disfluencies per minute. This can be done easily by counting on the fingers. Fold under one finger of the right hand for each disfluency observed; five will make a "fist." For each "fist" fold under one finger of the left hand; one left hand "fist" thus stands for 25 disfluencies. Observe for 10 minutes. Record the total number and divide by 10 to find the average number of disfluencies per minute. By using a tape recorder you can make a more detailed analysis.

In Wendell Johnson, Frederic L. Darley, and D. C. Spriestersbach, *Diagnostic Methods in Speech Pathology* (New York: Harper & Row, 1963), discussions of disfluency, with related class assignments, are presented in chapters 8 and 9. Form 11, "Measures of Disfluency of Speaking and Oral Reading," appears on page 236. These may be used or adapted to the present purposes, of course.

29. Two or more students, or even the entire class, are to listen to a stutterer speak for five to 10 minutes. Each student, independently, makes a tally mark each time he thinks he hears the speaker stutter. When the speaker finishes, each student reports the total number of tally marks recorded, and the instructor writes the numbers, from the lowest to highest, on the blackboard. Note the range, the average, and the nature of the distribution. What does the average mean, if anything? How do you account for the extent of disagreement? Does the stutterer himself tend to agree with the lowest number, the highest, or the average? How many stutterings were there "really"? See C. E. Tuthill, "A Quantitative Study of Extensional Meaning, with Special Reference to 'Stuttering,'" *Speech Monographs* (1946), *13*:81–98, and E. John Kottman, "Intension and Authoritarianism: A Study in General Semantics," *Journalism Quarterly* (1963), *40*:575–579. Use these articles as the basis of a comprehensive class discussion in connection with this project. Students familiar with general semantics will be especially interested in this discussion.

30. Go into three stores—or use other suitable situations, such as a conversation at the dinner table, on the bus, etc.—and pretend to be a stutterer. Do it with a straight face and don't explain what you are doing. Try to make the stuttering seem real. Stutter on at least three words in each situation. Describe the reactions of each listener. Account for them, as best you can, in

terms of the listener's attitudes, information or lack of it about stuttering, educational level, personal insecurities or good adjustment, or in terms of your own attitudes and behavior while doing the faked stuttering. Describe your feelings and reactions before, during, and after the performance in each case. What did you learn from this assignment about stuttering and what it means to be a stutterer? In connection with this project the following articles will be extremely interesting: Eugene T. McDonald and James V. Frick, "Store Clerks' Reaction to Stuttering," *Journal of Speech and Hearing Disorders* (1954), *19*:306–311; Oliver Bloodstein and Annette Bloodstein, "Interpretations of Facial Reactions to Stuttering," *Journal of Speech and Hearing Disorders* (1955), *20*:148–155.

Appendix E of Johnson, Darley, and Spriestersbach, *Diagnostic Manual in Speech Correction* (New York: Harper & Row, 1952), deals with the simulation of stuttering and may be used or adapted to the purposes of the present assignment.

31. Do Assignment 30 again, but this time pretend to be a lisper. In your speaking substitute the voiceless *th* for *s*, as in "thockth" for "socks," "yetherday" for "yesterday," etc.

32. Repeat Assignment 30, pretending you have a very nasalized voice.

33. Repeat Assignment 30, pretending to be seriously hard of hearing. In each situation, ask at least twice to have statements repeated; at least once pretend not to hear some particularly important remark; and at least once show that you definitely "misunderstand" by giving an obviously wrong or irrelevant answer or comment.

34. On the basis of one of the "pretend" exercises above, identify members of the problem as you observed them and suggest others who might have been members if your experience had lasted longer. Discuss the contribution of each observed or probable member.

35. If there is a surgeon in the vicinity who has performed cleft palate operations, it would be highly desirable to consult him. Many surgeons make a plaster cast of the palate before operating. If the instructor could borrow some of these for class demonstration, it would be possible to convey to the students an excellent idea of the extent and variety of clefts.

36. In many parts of the country there are public or private boarding or day schools for physically handicapped children. As a rule, a large proportion of the children attending such schools have cerebral palsy. Almost all the schools have speech correction work, and in some the speech program has been developed to a high degree of excellence. If such a school is nearby, it would be well worthwhile for the instructor to arrange to take the class for a day's visit. Firsthand observation of speech and physical therapy of cerebral palsied children would acquaint the students with some of the problems involved in this sort of work.

Inquiries about such schools should be made of state or local medical societies, state societies for crippled children, the National Society for Crippled Children and Adults, local Easter Seal organizations, or other such agencies (see Appendix IV for addresses).

37. There is an increasing amount of audiovisual material that can be used to good advantage in the study of speech and hearing problems. Most movies need a bit of explanatory introduction by the instructor, and their value is usually enhanced considerably by class discussion after they have been viewed. The American Speech and Hearing Association has made available *A Guide to Audio-Visual Materials on Speech and Hearing Disorders,* by Albert O. Weissberg, Ph.D., as Monograph Supplement 2, 1952, of the *Journal of Speech and Hearing Disorders.* This publication contains a well-ordered and annotated listing of films, filmstrips, slides, charts and diagrams, models, photographs, recordings, radio program scripts, and anatomy test sheets. Primary sources and rental and loan sources are listed, and commentary and suggestions concerning the utilization of these audiovisual materials in teaching are included.

For information about films and other materials that have become available since this monograph was published, inquiries may be addressed to the sources listed by Dr. Weissberg. In 1954–1955 the Columbia Broadcasting System presented a television series, "The Search," which included programs dealing with laboratory and clinical studies of hearing problems at the University of California (Los Angeles) and at Johns Hopkins University and of stuttering at the University of Iowa. Films of these CBS-TV programs are available on a rental basis from many

audiovisual departments in colleges and universities, or on a purchase or rental basis from McGraw-Hill Text Films, Hightstown, New Jersey 08520.

Note: Further assignments may be found in *Diagnostic Methods in Speech Pathology,* referred to above. Subjects presented in the 11 chapters of this book are as follows: a philosophy of diagnosis and appraisal, the case history, general speech behavior evaluation, testing articulation, the speech mechanism, examination of voice quality disorders, appraisal of language development and language disorders, measurement of amount of speaking and of the rate and disfluency of speaking and oral reading, the problem of stuttering, supplementary diagnostic procedures and referral principles, the examination report.

II

SUGGESTED TOPICS FOR TERM PAPERS

1. The speech correction program in ——— School.
2. Speech correction training programs in American universities.
3. State programs for speech handicapped children.
4. The program for the speech handicapped in your state.
5. The speech correction needs of ——— (city, county, state).
6. Trends in special education in the United States.
7. The National Society for Crippled Children and Adults: its national program and its organization in your own state and county.
8. The American Hearing Society.
9. The International Council for Exceptional Children.
10. The American Speech and Hearing Association.
11. The Speech Correction Fund. (See "The Speech Correction Fund: Objectives, Policies and Operating Procedures," *Journal of Speech and Hearing Disorders* (1954), *19*:158–260.)
12. State certification regulations for speech clinicians. (Address inquiries to U. S. Office of Education, as listed in Appendix IV.)
13. Federal agencies which minister to the needs of the speech handicapped. (Investigate particularly your own state division of services for crippled children and its affiliation with the federal government.)

14. A critical review of a textbook in speech correction or audiology.
15. An evaluative summary of the work of some particular speech clinician.
16. A critical evaluation of some particular theory of a speech disorder.
17. A critical evaluation of some particular clinical or remedial method.
18. The anatomy of the larynx.
19. The role of the soft palate in speech and speech disorders.
20. Factors contributing to the retardation of speech development.
21. Case study of a child with delayed speech development.
22. Personality problems of the cerebral palsied.
23. Handicapped persons who have made outstanding achievements.
24. The speech development of the child with "normal" hearing as contrasted with the speech development of the deaf child.
25. Residential schools for the deaf.
26. Day school classes for the hard of hearing.
27. Approaches to the teaching of speech reading.
28. Employment opportunities for the hard of hearing.
29. A critical review of studies of speech sound discrimination.
30. Methods of testing articulation correctness.
31. Stuttering viewed as learned behavior.

III

CLASS DEMONSTRATIONS OF PROBLEMS

In many situations it will be possible to present class demonstrations of children with speech or voice problems or hearing impairments. While instructors vary more or less in their preferred ways of conducting such presentations, the following suggestions may be of value in many instances:

GENERAL

1. Students should be prepared for a demonstration by advance discussion of the type of speech problem to be presented, and by suggestions of just what to look for in observing the particular child they are to see. It goes without saying that they are to be courteous and matter-of-fact in their reactions to the individual being demonstrated. They are to treat the problem presentation as confidential and not as a subject of indiscriminate conversation outside the classroom. Customary professional ethics are always to be observed.

2. The individual to be presented to the class should likewise be prepared in advance. He should not be presented if he is definitely opposed to it or seems to be overly apprehensive. Certainly his permission must be obtained. He should be told in some detail about the class and the professional training purpose

of the demonstration. Most persons, children or adults, are quite willing, even eager, to cooperate if they understand that they will be helping prospective clinicians to understand better how to help others with similar problems. They should be encouraged to look on the demonstration as an opportunity to "tell them what they ought to know" about children with impaired speech and to be of genuine service generally in a good cause. The individual should be told just what to expect, precisely what he will be asked or expected to do or to talk about, and when to arrive and leave.

3. A brief summary of the problem should be given to the class by the instructor before the individual is brought into the room. (Chapter 2, "The Case History," and chapter 11, "The Examination Report," of *Diagnostic Methods in Speech Pathology*, referred to in Appendix I, contain relevant forms and discussion.) Then the individual should be presented, according to the suggestions given below or according to the instructor's own preferred procedure. He should then leave, and after he has gone there should be relevant class discussion of the problem and possible ways of dealing with it.

4. It is almost always—and so far as most teachers and most schools are concerned it *is* always—unwise to demonstrate a child with a speech handicap to a lay audience made up of his parents and their neighbors. *If* it were done in precisely the "right" way, with thorough appreciation on the part of everyone concerned of the purpose of the demonstration, it might not be objectionable and it might even have value, but the "if" is so large, as a rule, that it overshadows all other considerations.

Now and then a child—one who stutters, for example—might reach the point in his training where he genuinely desires to tell a PTA audience, perhaps, about his own stuttering and stuttering in general. Having done this sort of thing in his classes, he might feel that he would gain something for himself and do a good turn for others by talking to a group of parents. Certainly he should have his parents' permission, and the teacher in charge should be fully capable of making clear to the audience what the youngster is going to do, why he wants to do it, and what the purpose is. In case of doubt, however, it should not be attempted.

Demonstrating children to people, even laymen, who do not know them or their families is something else again, of course. It can be a most effective educational procedure. Problem demonstrations can be presented also before teachers' meetings with good effect.

5. The usual presentation should be well-planned, brief, and to the point. Discussion before and after may, of course, be as detailed as seems profitable. The same child may be brought before the class several times, but each presentation should be pointed up purposefully.

6. The instructor should feel no concern about his ability to answer all the questions that might possibly be asked about a child he has demonstrated. Problems presented to the classes are to be discussed and pondered. They serve to raise many more difficult questions than easy answers.

7. Demonstrations are to be conducted matter-of-factly, with due respect shown to the child as a person, with no embarrassing show of sympathy, and in a spirit of professional observation and study. The child being presented is to be regarded as a partner in a learning situation.

STUTTERERS

WHAT TO LOOK FOR. If the person being presented to the class is a stutterer, here are some of the things to look for:

1. General adjustment to the speaking situation. Evidence of poise or lack of it. Tendency to be apologetic, self-effacing, to alibi, to boast, to exhibit self-pity or to be matter of fact, objective, and good-natured.

2. General quality of speech and voice, aside from the stuttering.

3. Apparent physical condition or state of health.

4. Approximate percentage of words stuttered. It will be instructive for the members of the class to make independent estimates and see how well they agree or how widely they disagree. In general, until sufficient experience has been gained, there will be a tendency to pitch these estimates too high. (See chapter 9, *Diagnostic Methods in Speech Pathology.*)

5. Phenomena to be observed during stuttering. ("Check List of Stuttering Reactions," Form 13, pp. 279–280, *Diagnostic Methods,* can be used in this connection.)

6. The stutterer's ability to modify or eliminate specific features of his stuttering.

7. The stutterer's ability to reduce tensing in his stuttering.

8. The stutterer's ability to imitate his own stuttering, with or without a mirror, and to stutter in other specific ways in response to instructions to do so.

9. The stutterer's ability to sing, whisper, talk very fast, very slowly, in a monotone or singsong, to speak with a dialect, in time to rhythms, to read in chorus with another person, even another stutterer.

10. Any types of speaking or reading which the stutterer can perform with little or no difficulty or with which he has unusual difficulty.

11. The stutterer's own beliefs, assumptions, or theories regarding the causes of his stuttering, especially his ability to marshal scientifically acceptable evidence of the soundness of his views.

12. The stutterer's ideas as to what he should do to overcome his speech difficulty, and his ability to outline specific techniques, and to provide sound reasons for his recommendations.

13. Conditions that tend to make the stuttering worse or better, insofar as these can be reliably reported by the stutterer.

14. Personal adjustment in home, school, or community, and in relation to educational and vocational planning, in dating and other social situations, as these can be described by the stutterer, particularly in terms of the contributions of members of his problem.

15. The stutterer's suggestions as to what he should do about these adjustment problems, and his ability to defend the soundness of his suggestions.

16. The stutterer's main abilities and personality assets.

Questions for subsequent class discussion

1. What general impression did the stutterer make on the various members of the class? Did he seem intelligent? Dull? Average

in mental ability? Why did he seem so? How would each of the students rate the general severity of his stuttering on the seven-point scale to be found in Form 14, *Diagnostic Methods,* pp. 281–282, and described in the section on rating severity of stuttering, pp. 259–261? What specific features of his stuttering were most prominent? Would the students judge him to be popular? Withdrawn? Good-natured? Sensitive? Tough-minded or objective? What particular jobs would he have difficulty getting or holding? What kinds of jobs could he probably handle satisfactorily or even in a superior manner? How would he get along on a date? What special adjustments should be made for him with respect to oral work in his classes? Would he be pleasant to work with in a speech correction situation? What specific difficulties would probably arise in trying to improve his speech? Why?

2. In undertaking to improve the stutterer's speech, what specific changes should be attempted first? What are the next two or three things that might be attempted?

3. Should he be referred to a doctor, psychologist, or to other specialists or clinics? For precisely what purpose?

4. What changes should be made in the stutterer's home conditions, school arrangements, study habits, recreational program, daily routine, vocational plans, social activities?

5. Should conferences be held with his parents, teachers, roommate, employer, or other persons? For precisely what purpose? Who should talk to these individuals? Should the stutterer do it himself?

6. Has he had any speech correction in the past? What was the nature of it? How did he respond to it?

7. In what important ways does he differ from other stutterers the students have seen in class or elsewhere? What probably accounts for these differences?

8. If he is not receiving remedial instruction, what course should he be advised to follow?

Note: It is not to be expected that all of these questions, or even most of them, will be answered satisfactorily in any given case. It is not intended that they should necessarily be answered. Often the best answer is, "I don't know. I don't think I should try to answer the question until I get to know the stutterer better and until I have had more training and experience." The

things to look for and the questions for class discussion listed above are presented simply for their value in suggesting directions that observation and study might well take.

CHILDREN WITH CLEFT PALATES

In presenting a child with a cleft palate to a class, usually no attempt should be made to show the students the child's palate, whether it is repaired or not. In order for anyone to get any notion of the actual condition of the palate, it is necessary to examine it with the use of a flashlight and tongue blade. This means that only one or two students can look at a time. It would usually not be wise to subject a child to close observation by each member of a class of any size. It will often be best, therefore, not to try to demonstrate the palate.

The child should first be introduced to the class. Then if he has prepared some remarks, he may proceed to make them. Otherwise the teacher may ask him questions. Following this, he may answer questions from the class.

WHAT TO LOOK FOR. Is there any abnormality in facial appearance? Is there a scar of a repaired harelip? Is the upper lip sunken or tightly drawn? Is the voice unusual? In what respects? Is the speech clearly understandable? Are any sounds misarticulated? Which ones? What sort of articulatory imperfections occur—omission, distortion, or substitution? What manifestations of attitude and adjustment are to be observed?

Questions for subsequent class discussion

1. What sort of impression did the child make? (See Question 1 under "Stutterers.")
2. If any abnormal facial appearance was noted, in what way might the cleft be related to it?
3. Was the voice nasal? Was it free from nasality at times or on certain words? Did it carry well?
4. What were the impaired sounds? Could the cleft be held responsible for each of these? What other factors might explain any faults in articulation which probably are not caused by the cleft?

5. What sort of speech correction techniques should be used to improve the speech of this child? Why? Describe the goals and the means that might be used to reach them.

6. What assets and abilities did the child seem to have? Are these more or less important than the cleft? What was gained by regarding the child as a "cleft palate case"? What was lost or overlooked?

CHILDREN WITH CEREBRAL PALSY

If the child wishes to make a little prepared talk, that is a good way to start the presentation of cerebral palsy and speech. Otherwise, he may be interviewed by the instructor. It is desirable for him to answer questions from the class—provided, of course, that he willingly agrees in advance. He should write his name on the blackboard, if he can, so that the class can observe his writing.

Throughout the presentation, the attitude of the instructor should be friendly, encouraging, good-humored, and calm. The incoordinations of such a child are made worse by excitement, and the child *is* likely to be excited when he appears before the class. One must not be misled into thinking that his willingness to appear in class will prevent his being excited. Actually, though such a child will often be eager to talk to the class, his desire to do a good job and to tell others how a spastic or an athetotic person feels will frequently result in a high pitch of excitement. This clearly means that it is important to discuss the class appearance with the child—and with the class—well before the date set for it. The child should understand precisely what he is to do. His overeagerness and anticipation should be calmed as much as possible. If he has not achieved relative calmness and relaxation in other situations, it might be harmful to use him in a class demonstration. He could easily become so excited and tense as to be unable to function adequately. Even if he has made considerable progress in controlling his reactions of excitement, it is to be expected that he will react in some degree to his appearance before the class.

WHAT TO LOOK FOR. What is the general appearance? Observe the walking and other movements. What differences from normal do you see? Describe the handwriting. Is the voice unusual? In

what way? Is the rate of speaking slow? Estimate the number of words per minute. Does speaking seem to be labored and painful? Is the flow of speech jerky and hesitant? Is the speech clearly understandable? Are any sounds misarticulated? What sounds? How are they misarticulated?

Questions for subsequent class discussion

1. What sort of impression did the child make? (See Question 1 under "Stutterers.")
2. How much are walking, writing, etc., affected? How much handicap does this create?
3. Which of the characteristics of the speech may be ascribed to the cerebral palsy? Which may not? How does the palsy operate to produce the deviations observed?
4. What speech correction problems does the case present? What means might well be used to attack these problems?
5. What is gained by regarding this child as a "cerebral palsy case"? What is lost? How should one regard him?

CHILDREN WHO ARE HARD OF HEARING

In presenting a child with a hearing deficiency, the general rules previously outlined should be followed. In addition, the audiogram should be shown and discussed, results of the speech examination should be reviewed, the child's ability in speech reading should be demonstrated, and the advisability of a hearing aid is to be considered. The medical history, general physical examination, and the ear, nose, and throat findings should be summarized. The school history and the results of mental tests also should be presented. It will usually be desirable to have the examining physician, audiologist, and psychologist present to give their reports in person whenever this can be arranged.

This general procedure is followed in the hearing clinics conducted at the University of Iowa by the Department of Otolaryngology which provides diagnostic services. Recommended therapy then becomes the responsibility of other agencies including the University Speech Clinic and the Iowa State School for the Deaf. In each of these clinics a number of cases is reviewed and discussed, the required services for each one are

agreed on, and procedures for obtaining these services are outlined. Otologists, speech clinicians, the workers responsible for audiometric and hearing aid tests, psychologists, social workers, and the superintendent and other members of the staff of the State School for the Deaf participate in the presentations and discussions. The parents of the children are present. County welfare workers, physicians, teachers, and other professionally interested persons frequently attend the clinics. Students enrolled in courses in speech pathology and audiology, nursing, occupational therapy, physical therapy, clinical psychology, and special education also attend. It is thus essentially a team approach.

WHAT TO LOOK FOR. Ascertain the degree to which a given hearing loss is socially handicapping. For example, one might be demonstrating a child with a 35 dB loss in the speech range (512, 1,024, and 2,048 Hz). Have him turn his back or close his eyes and then talk to him in a normal tone of voice. Show how much speech he is able to understand without the aid of speech reading then how much when he can see as well as hear.

Show a child whose hearing loss is recent. Point out the fact that there is little, if any, speech deterioration, although it may occur eventually unless "speech insurance" training is given.

Demonstrate a child with a sensorineural or inner-ear type of loss that has existed for a long time. Contrast his speech with that of a child whose loss is of the middle-ear or conductive type.

Point out and emphasize the most effective way of addressing the hard-of-hearing child—naturally and easily.

Questions for subsequent class discussion

1. What were the overt characteristics that indicated difficulty in understanding speech?
2. How would you obtain a rough estimate of a child's speech reading ability?
3. For the child with a recent hearing loss, in what ways would you expect speech to deteriorate with respect to voice, articulation?
4. To what extent was any observed articulatory impairment probably due to the hearing loss?

5. Would a hearing aid be advisable, if the child does not have one? What sort of instruction and training would he need in learning to use a hearing aid most effectively?

6. What recommendations should be made with respect to educational provisions and vocational counseling for the individual?

CHILDREN WITH ARTICULATORY PROBLEMS

It will usually make a good presentation if the speech of the child can be observed on two kinds of material: (1) ordinary connected speech that can be an oral reading of a paragraph or a short talk or a conversational situation in which he is interviewed by the instructor; (2) lists of words containing the sounds on which he tends to make errors. These words may be elicited by means of pictures, especially if the child is young. If he is able to produce some of the sounds correctly in isolation or in words, especially in response to auditory stimulation by the teacher, a demonstration of his ability in this respect will add effectively to the presentation.

WHAT TO LOOK FOR. What sounds are misarticulated? What types of errors does he make—substitutions, distortions, or omissions? How consistent are the errors? How much is his ordinary speech affected? Unintelligible? Partly unintelligible? Intelligible but with numerous errors so that it seems severely impaired? Intelligible with only a few errors, so that it seems only slightly impaired? Are there any observable characteristics, such as dental irregularities, which may be related to the speech problem? How responsive is he to auditory stimulation? How does he adjust to the speaking situation?

Questions for subsequent class discussion

1. What errors were observed?

2. What organic, emotional, or environmental factors may be related to the speech problem? In what way?

3. To what extent may these factors be remediable? How can they be corrected and should speech retraining be deferred until after the correction has been made?

4. What is the probable prognosis? What favorable factors would point toward good progress? What unfavorable factors would tend to impede progress?

5. How much of a handicap does the speech present?

6. What special speech correction problem does the child present, if any?

CHILDREN WITH VOICE PROBLEMS

Observation of the usual speaking voice usually can be made by having the child read aloud or present a short talk. He can also be interviewed by the teacher. Individuals who have improved with training can sometimes be most effectively presented if during a part of the presentation they simulate the voice they used before retraining in a sort of "before and after" demonstration. Recordings made at the beginning of remedial work and from time to time thereafter also can be used in presenting such cases.

WHAT TO LOOK FOR. What is the most noticeable unpleasant or deviant feature of the voice? In what additional ways is the voice significantly faulty? Does the pitch level seem suitable for the individual? Can he produce adequate loudness? How would you classify the voice quality? Normal? Nasal? Breathy? Hoarse? Harsh? Is there any evidence of excessive strain or tension? What is the individual's general adjustment to the speaking situation?

Questions for subsequent class discussion

1. What seemed to be the most noticeably faulty characteristic of the voice?

2. In what other respects was the voice faulty?

3. What factors are known to exist—organic, emotional, environmental, etc.—that might possibly be related to the problem?

4. What is the probable relationship of these factors to the voice problem?

5. To what extent are these factors remediable? How can they be remedied?

6. What sort of program of voice retraining would be suitable for this child?

IV

AGENCIES AND ORGANIZATIONS

The student of speech and hearing problems should be aware of the agencies and organizations designed to be of service to him and to the children and adults whose problems are of professional concern to him. They can provide him with a wealth of statistical information, answers to specific questions, publications, audio-visual materials,. and professional counsel of various kinds. Many of the organizations publish journals and magazines. The student will be particularly interested, of course, in the *Journal of Speech and Hearing Disorders,* the *Journal of Speech and Hearing Research,* and *Asha,* publications of the American Speech and Hearing Association, the professional organization of speech clinicians in the United States, and *dsh Abstracts,* published by Deafness Speech and Hearing Publications, an organization founded by the American Speech and Hearing Association and Gallaudet College.

Alexander Graham Bell Association for the Deaf, 1537 35th Street N.W., Washington, D.C. 20007

American Academy for Cerebral Palsy, Inc., 1520 Louisiana Avenue, New Orleans, Louisiana 70115

American Academy of Pediatrics, 1801 Hinman Avenue, Evanston, Illinois 60201

American Association on Mental Deficiency, P. O. Box 96, Willimantic, Connecticut 06226

American Association of Psychiatric Clinics for Children, 250 West 57th Street, New York, N.Y. 10019

American Cleft Palate Association (1966); Dr. Kenneth R. Bzoch, Department of Communicative Disorders, College of Health Related Professions, University of Florida, Gainesville, Florida 32601

American Medical Association, 535 North Dearborn Street, Chicago, Illinois 60610

American Occupational Therapy Association, Inc., 250 West 57th Street, New York, N.Y. 10019

American Physical Therapy Association, 1740 Broadway, New York, N.Y. 10019

American Psychological Association, 1200 17th Street N.W., Washington, D.C. 20036

American Rehabilitation Committee, 28 East 21st Street, New York, N.Y. 10010

American Speech and Hearing Association, 9030 Old Georgetown Road, Washington, D.C. 20014

Child Welfare League of America, Inc., 44 East 23rd Street, New York, N.Y. 10010

Council for Exceptional Children, 1201 16th Street N.W., Washington, D.C. 20006

International Society for Rehabilitation of the Disabled, 219 East 44th Street, New York, N.Y. 10017

Mental Health Materials Center, 104 East 25th Street, New York, N.Y. 10010

National Association of the Deaf, 2025 Eye Street N.W., Suite 318, Washington, D.C. 20006

National Association of Hearing and Speech Agencies, 919 18th Street N.W., Washington, D.C. 20006

National Association for Mental Health, 10 Columbus Circle, New York, N.Y. 10019

National Association for Retarded Children, 420 Lexington Avenue, New York, N.Y. 10017

National Association of Sheltered Workshops and Homebound Programs, Inc., 1522 K Street N.W., Suite 410, Washington, D.C. 20005

National Congress of Parents and Teachers, 700 North Rush Street, Chicago, Illinois 60611

National Education Association, 1201 16th Street N.W., Washington, D.C. 20006

National Foundation—March of Dimes, 800 Second Avenue, New York, N.Y. 10017

National Public Relations Council of Health and Welfare Services, 257 Park Avenue South, New York, N.Y. 10010

National Rehabilitation Association, 1522 K Street N.W., Washington, D.C. 20005

National Shut-In Society, Inc., 11 West 42nd Street, New York, N.Y. 10036

National Society for Crippled Children and Adults, 2023 West Ogden Avenue, Chicago, Illinois 60612

National Society for the Study of Education, 5835 Kimbark Avenue, Chicago, Illinois 60637

Social Legislation Information Service, 1346 Connecticut Avenue N.W., Washington, D.C. 20036

United Cerebral Palsy Associations, Inc., 321 West 44th Street, New York, N.Y. 10036

United States Department of Health, Education, and Welfare, 330 Independence Avenue S.W., Washington, D.C. 20201

Bureau of Public Assistance

Children's Bureau

Interdepartmental Committee on Children and Youth

Office of Education

Office of Vocational Rehabilitation

World Federation for Mental Health, 124 East 28th Street, Suite 716, New York, N.Y. 10016

V

SOME BASIC FEATURES OF SPEECH SOUND ARTICULATION

The purpose of this section is to present a brief discussion of the sounds of English speech, especially as spoken by the majority of Americans—this may be helpful in understanding how these sounds are articulated. By no means is this short discussion to be considered more than a brief introduction to the subject of phonetics.

First, the reader will need to have some acquaintance with the sound system of American English. Accordingly, the following list of common vowels, diphthongs, and consonants is presented. This list does not include all the sounds that occur in every dialect of American English. It does present the sound system of the dialect spoken, with some variations to be sure, throughout most of the United States (except the East and the South); it is frequently referred to as the General American dialect. The list includes the "*r*-colored" vowels for words like *work* and *butter,* which are regular in the General American dialect but absent from the speech of most natives of the Southern and Eastern dialect regions; certain vowels that are regular in the latter dialect regions, but not in General American, are omitted.

Speech sounds can be classified in a number of different ways. One distinction useful to this discussion is that between vowels (including diphthongs which are made up of vowel elements) and consonants. These rather distinct speech sound classes differ

VOWELS

Orthographic Symbol	*Phonetic Symbol*	*Key Words*
ē	[i]	ch*ee*se, b*ea*t, br*ie*f
ĭ	[ɪ]	ch*i*p, m*y*th, b*ui*lt
ā	[e][1]	f*a*ce, pl*ay*, *ei*ght
ĕ	[ɛ]	d*e*ck, fr*ie*nd, f*ea*ther
ă	[æ]	bl*a*ck, pl*ai*d, tr*a*p
ä	[ɑ]	f*a*ther, c*a*lm, *a*rm
ô	[ɔ]	c*au*ght, l*aw*n, *aw*ful
ō	[o][1]	c*oa*t, g*o*, *ow*n
o͝o	[ʊ]	b*oo*k, p*u*ll, c*ou*ld
o͞o	[u]	bl*ue*, ch*ew*, f*oo*l
ŭ	[ʌ][2]	m*o*ther, c*u*p, b*u*bble
ă	[ə][3]	*a*bout, c*o*nnect, sof*a*
ûr	[ɝ][2]	w*or*k, b*ur*st, c*er*tain
ĕr	[ɚ][3]	butt*er*, p*er*suade, act*or*

DIPHTHONGS [4]

Orthographic Symbol	*Phonetic Symbol*	*Key Words*
ī	[aɪ]	k*i*te, tr*y*, b*uy*
ou	[aʊ]	c*ow*, d*ou*bt, r*ou*nd
oi	[ɔɪ]	b*oi*l, t*oy*, *oy*ster

[1] These vowels when prolonged tend to become diphthongs; [e] tends to become [eɪ] and [o] tends to become [oʊ]. In English speech this difference is not distinctive, e.g., we may pronounce the word *face* as either [fes] or [feɪs] without changing the meaning of the word spoken.

[2] These vowels occur only in stressed syllables. Hence, in the word *above* [əbʌv] only the second syllable, which is stressed, is transcribed as [ʌ]. Likewise in the word *murder* [mɝdɚ], only the first syllable is transcribed as [ɝ].

[3] These vowels occur only in unstressed syllables.

[4] These are not the only diphthongs that occur in English speech. They are the ones that need to be especially noted because they occur as distinctive sound units. In addition to these and the diphthongs [eɪ] and [oʊ], already noted, there are the diphthongs formed with the unstressed vowel [ɚ]. Examples are: *card,* [kɑɚd], *tear,* [tɛɚ], *steer,* [stɪɚ], etc.

in a number of ways. In this discussion we shall be concerned mainly with physiological differences in the articulation of vowels and consonants.

CONSONANTS

Orthographic Symbol	*Phonetic Symbol*	*Key Words*
p	[p]	*p*eo*p*le
b	[b]	*b*a*b*y
t	[t]	*t*a*st*e
d	[d]	*d*a*nd*y
k	[k]	*k*i*ck*
g	[g]	*g*a*g*
m	[m]	*m*a*im*
n	[n]	*n*oo*n*
ng	[ŋ]	ri*ng*i*ng*, i*nk*
f	[f]	*f*oo*d*, *ph*oto
v	[v]	*v*ase, lea*v*e
th	[θ]	*th*irst, ba*th*
th	[ð]	*th*is, ba*th*e
s	[s]	sin*c*e, *s*cent, pa*ss*
z	[z]	buzz, busy, lo*s*e
sh	[ʃ]	*sh*ow, *s*ure, ocean
zh	[ʒ]	u*s*ual, azure, bei*g*e
h	[h]	*h*ome, *wh*ole
ch	[tʃ]	*ch*ew, ba*tch*
j	[dʒ]	*j*oke, ba*dg*e
hw	[hw]	*wh*y, *wh*ere
w	[w]	*w*ill, *w*ear
l	[l]	*l*ook, ba*ll*
r	[r]	*r*oad, *r*eel
y	[j]	*y*ellow, *y*awn

SHAPING OF RESONANCE CAVITIES FOR VOWELS

Vowels are produced as a result of movements of the lips, jaws, and tongue which produce characteristic shapings of the vocal resonance cavities during the utterance of a vowel. It is one of the special properties of vowels that the sound vibrations which

excite the vocal cavities for vowel utterance originate in the larynx. However, the specific nature of the vibrations originating there has no influence on the particular vowel that is spoken, that is, the sound generated in the larynx may be high-pitched or low-pitched, loud or soft without having an effect on the particular vowel that is uttered. The sound produced in the larynx need not be a tone produced by vocal fold vibration. It can be a noise generated by a rush of air through a narrowed glottal slit, as in whispered vowels. In brief, the particular vowel uttered is independent of the characteristics of the laryngeal excitation. The distinctions among the various vowels result from the selective action of the resonance cavities which modify the laryngeal sound in characteristic ways for each different vowel. It is an important feature of vowels that the only place where the breath stream is set into vibration is the larynx. This is true because there is so little constriction of the vocal tract during vowel production that the vibrating breath stream passes freely outward without being further modulated.

CONSONANTS CHARACTERIZED BY NOISE GENERATION

It is characteristic of consonants, on the other hand, that the vocal tract is constricted or obstructed in a particular way at some location above the larynx. As a result the breath stream is constricted or diverted or obstructed momentarily. For many consonants this constriction or obstruction of the breath stream becomes the source of noise vibrations which are therefore added to any sound vibrations which have originated from the vocal folds in the larynx. Consonant sounds consisting of vibrations from the vocal folds, to which noise vibrations produced by a constriction or obstruction of the vocal tract may be added, are called "voiced" consonants. Others for which there is no vocal fold vibration may be classified as "voiceless" consonants. For these latter consonants, the only source of sound vibration is the modulation of the breath stream by the constriction or obstruction of the vocal tract. For example, the consonants [s] and [z]

are both produced by a narrow channeling of the breath stream between the tongue and the gum ridge behind the upper front teeth. The jet of air produced by forcing the breath through this narrow opening is directed across the cutting edges of the teeth so that a hissing noise is produced. In the case of [z], the breath stream has already been set into vibration by the vocal folds and this hissing noise is therefore added to the voice vibrations so that a voiced sound is produced. For [s] the only source of vibration is the jet of air directed against the cutting edges of the teeth, and it is a voiceless sound.

VOWEL-LIKE CONSONANTS

For a few consonant sounds the breath stream is not constricted or obstructed sufficiently to generate additional sound vibrations. These sounds are like vowels in that they are given their unique sound characteristics as a result of the particular way the complex vibration from the vocal folds is modified by the vocal tract resonators. For example, the nasal consonants are produced by diverting the vibrating breath stream through the nasal passages. This nasal emission of sound occurs because the oral channel is completely obstructed by the tongue or lips while at the same time the soft palate is sufficiently relaxed to permit air to pass through the velopharyngeal port into the nasal cavities. As a consequence of the special resonance characteristics of the nasal cavities, these sounds have a common kind of quality. Each nasal consonant has its own special characteristics, also, which result from the particular way the oral cavity is shaped for it. Thus for [m], the oral cavity is closed by the lips and is therefore much larger than for [n], on which the tongue produces the obstruction of the oral cavity by making contact with the upper gum ridge.

The consonants which are vowel-like in the above sense, that is, in their production there is too little constriction of the oral tract to generate turbulent or transient noise, include [m], [n], [r], [l], [w], [j]. We classify them as consonants rather than vowels primarily because they tend to combine with vowels to form syllables in the same fashion as other consonants. For

example, compare the following syllables: *know* [no], *low* [lo], *foe* [fo], *show* [ʃo], *toe* [to]. All of the syllables consist of a consonant followed by the vowel [o]. It is obvious that the consonants all have a similar relationship to the vowel in the syllables. The same can be said about the following syllables, *own* [on] and *ode* [od], where the consonant follows the vowel. Although there are a few cases where the consonants of this type may function like a vowel in forming syllables, for example, [l] in *whistle* [whisl] or *paddle* [pædl] and [n] in *button* [bʌtn] and *hidden* [hɪdn], this is the less usual case. Most typically they combine with other sounds in the same manner that other consonants do. Hence, they are usually classified as consonants, but are sometimes placed in a special category of consonants and given the label "semivowels."

HOW VOWELS ARE CLASSIFIED

Because vowels are produced as a result of the way the vocal tract is shaped and because the tongue plays such an important role in shaping the vocal tract, phoneticians commonly classify vowels according to the tongue position most typical for the articulation of each vowel. Thus [i], the vowel in the word *meat,* is classified as a high, front vowel, since the front of the tongue is high in the mouth during the utterance of [i] and the whole tongue is quite far forward. On the other hand, [ɑ] as in *father* is classed as a low back vowel because the tongue is retracted and low within the mouth. The following table classifies the vowels primarily on the basis of tongue position. For the vowels produced with retracted tongue positions, the presence or absence of lip-rounding is also noted and the feature of [r] coloring is considered in distinguishing among the central vowels.

	Front	*Central with* [r] *coloring*	*Central, no* [r] *coloring*	*Back unrounded*	*Back rounded*
High	i				u
	ɪ				ʊ
Mid	e	ɝ	ʌ		o
	ɛ	ɚ	ə		ɔ
Low	æ			ɑ	

CLASSIFICATION OF CONSONANTS ACCORDING TO PHYSIOLOGICAL FEATURES

In cataloguing consonants according to physiological features of articulation, as shown in Table A, it is common practice to employ a threefold system of classification in which consideration is given to the following:

1. PLACE OF ARTICULATION. This basis for classification takes special note of where in the vocal tract the breath stream is constricted or obstructed and what articulatory structures function to narrow or close the passageway. Thus, [p] and [b] which are produced by contact between the lips are classed as bilabial sounds, and [s] and [z] which require contact of the tongue against the gum ridge (alveolar ridge) behind the upper front teeth are classed as alveolar, or post-dental, sounds.

2. MANNER OF ARTICULATION. This dimension of articulation refers to the particular way the articulatory structures act to produce the characteristic sound pattern of the consonant. Different phoneticians use somewhat different classes to denote this aspect of consonant articulation. The ones employed in this discussion are: fricative, stop-plosive (sometimes shortened to *stop*), affricate, nasal, glide.

Fricatives are sounds produced by narrowing of the vocal tract so that the air stream is set into vibration by forcing it through a restricted opening. Because the characteristic noises of these consonants are produced as a result of friction between the air stream and the constricted articulatory structures, the name "fricative" describes quite well the manner of their production. It should be noted that some pressure is required to force the breath through the constriction, and so the closure between the soft palate and pharyngeal walls must be relatively complete if these sounds are not to be produced with an abnormal emission of air through the nose.

Stop-plosives, also called "stops," are produced by momentary complete obstruction of the vocal tract, which dams up the breath stream and creates increased pressure, followed by a sudden release of the breath pressure which often produces an audible, explosive puff of air or aspiration. There are thus two

phases for the complete stop-plosive consonant: (a) the stop phase in which the appropriate articulatory structures are brought into contact and complete obstruction of the vocal tract is produced, and (b) the explosion or release phase which is the sudden release of the air pressure which has been built up behind this occlusion. Particular examples of stops, as they occur in running speech, do not necessarily have both phases as audible components of the sound. Which phases of the sound actually occur will depend on what sounds precede and follow the stop. Like fricatives, stops require closure of the nasal port; that is, the soft palate and pharyngeal walls must come into contact to prevent air from escaping through the nose.

Affricates. Some phoneticians do not include this as a separate classification, since the affricates may be thought of as consisting of stops followed by frictional release of breath. Thus they combine some of the features of stops with certain features of fricatives.

Nasals are sounds in which there is complete obstruction of the oral cavity but the air is not blocked, since the nasal port is not closed. Hence, the vibrating breath stream is diverted through the nasal passages.

Glides are a class of consonants which are characterized by movement. They do have a place of articulation, in the sense that they begin with a characteristic placement of the tongue or lips. However, this placement is very transitory. The structures move immediately toward the placement for the sound which follows. Hence, the most significant characteristic of these sounds is the movement which is denoted by the class name, glide.

3. VOICING. The third aspect of consonant articulation employed in the threefold classification is the presence or absence of vocal fold vibration. For certain pairs of sounds, this characteristic is the only significant feature which distinguishes one member of the pair from the other. Thus [s] and [z] differ only because [s] is voiceless while [z] is voiced. As previously noted, there are usually two sources of sound generation for the voiced sounds, the laryngeal vibration and the place of constriction or obstruction. All the voiceless sound generation takes place at the constriction or obstruction of the vocal tract. In Table A the consonants of English are classified by this threefold system.

Close study of this table will help the reader understand a good deal about how particular consonants are produced. It is strongly urged that as this table is studied the reader experiment with articulating the various consonants and attempt to observe introspectively the various features of the consonants denoted by the way in which they are classified.

TABLE A. *Classification of Consonants According to Principal Physiological Features of Articulation*

	Stop-plosive		Fricative		Affricate		Nasal	Glide	
	+	−	+	−	+	−	+	+	−
Bilabial (lips)	b	p					m	w	hw
Labio-dental (lip-teeth)			v	f					
Lingua-dental (tongue-teeth)			ð	θ					
Alveolar (tongue-gum ridge)	d	t	z ʒ	s ʃ	dʒ	tʃ	n		
Palatal (tongue-hard palate)									
Velar (tongue-soft palate)	g	k							
Glottal				h					

NOTE: The + indicates the voiced consonants; the − indicates the voiceless consonants.

VI

ESTIMATING NATURAL PITCH LEVEL

The most satisfactory method yet devised for estimating a person's natural pitch level is given by Fairbanks in his *Voice and Articulation Drillbook*.[1] The method involves determining the individual's total singing pitch range, including the high notes of the range often designated by the term "falsetto," by finding the lowest and highest pitches he can produce. The pitch selected as the estimate of the natural pitch level is that which lies one-fourth of the total singing range above the lowest note that can be sustained. Fairbanks gives somewhat different specific procedures for carrying out this method in the two editions of his book. Either procedure should give the same result. The one described in the earlier edition, however, seems somewhat simpler and easier for most persons to apply. Accordingly, it is the one followed here, and an adaptation of Fairbanks' instructions and his table for interpreting results are reproduced below.

Estimate the subject's natural pitch level as follows. Have the subject sing down to his very *lowest* tone. Letting this tone be *do* of the musical scale, have the subject sing up the scale to his very *highest* note including *falsetto*. Repeat this several times to be sure that the maximum range is being covered. (If the subject has difficulty in singing a

[1] Grant Fairbanks, *op. cit.* (1940), pp. 168–171; rev. ed. (New York: Harper & Row, 1959), pp. 122–126.

TABLE B. *Calculation of Natural Pitch Level in Tones Above Lowest Note, by Determining 25 Percent of Total Range*

Name of highest note	Number of highest note	Range in musical tones	Natural pitch level in tones	Name of natural pitch level
do	1	0		
re	2	1.0		
mi	3	2.0		
fa	4	2.5		
so	5	3.5		
la	6	4.5	1.1	re
ti	7	5.5	1.4	re
do	8	6.0	1.5	mi
re	9	7.0	1.8	mi
mi	10	8.0	2.0	mi
fa	11	8.5	2.1	mi
so	12	9.5	2.4	fa
la	13	10.5	2.6	fa
ti	14	11.5	2.9	fa
do	15	12.0	3.0	so
re	16	13.0	3.3	so
mi	17	14.0	3.5	so
fa	18	14.5	3.6	so
so	19	15.5	3.9	so
la	20	16.5	4.1	la
ti	21	17.5	4.4	la
do	22	18.0	4.5	la
re	23	19.0	4.8	la
mi	24	20.0	5.0	ti
fa	25	20.5	5.1	ti
so	26	21.5	5.4	ti
la	27	22.5	5.6	ti
ti	28	23.5	5.9	do
do	29	24.0	6.0	do

scale it may be necessary for the clinician to sing it with him.) Count the notes as the subject sings from his lowest to his highest note. Research has shown that, following these instructions, superior speakers have average total singing ranges, including falsetto, of approximately 22 to 24 notes, or 18 to 20 musical tones. Refer now to the accompanying table and locate the highest note by number in column 2. The number opposite this in column 3 is the *number of musical tones* in the total singing range. Now move directly across to column 4 which states in musical tones approximately how far the natural pitch level lies above the lowest tone. In other words, this last value is a measure of the subject's *natural* pitch level in musical tones above the lowest note of his range. If a piano is available, it will be possible to locate exactly the various pitches used in this process.

The procedure just stated serves very well if the individual is able to sing a scale and has a pitch range that is not too severely restricted. If either of these conditions is not met, the procedure must be somewhat modified.

When a person seems to be completely unable to sing a scale (even with the clinician singing at the same time), determination of the total pitch range becomes difficult. Usually a reasonably good determination can be made, however, if a piano is available, if the individual is cooperative, and if the clinician has a reasonably good ear for pitch.

Often a person can sing a pitch glide, either upward or downward, when he cannot sing the spaced steps of the musical scale. If he can do this have him sing the vowel *ah* and glide slowly downward in pitch to the lowest tone he can produce and hold that tone a moment. The clinician should listen carefully for that lowest tone, remember it, and find the note on the piano that most nearly matches it. This procedure should be repeated several times to make sure that the lowest note has been located as accurately as possible. A similar procedure is then followed with an upward glide in pitch, to locate the highest note. The number of notes on the piano keyboard between these lower and upper limits may then be counted and this number used in entering column 2 of the table. The person's singing range will then be given by the corresponding number in column 3, and the location of the natural pitch level may be found in column 4.

Sometimes a person has difficulty even with this pitch glide

procedure; however, he may still be able to produce an upward or downward inflection of pitch if one suggests an actual word to him and tells him how it is to be spoken. Have the subject speak the word "no" with a downward inflection suggesting a decisive declaration. If possible, it should be spoken so that the lowest pitch reached is sustained for a moment to make sure it is really a tone he can prolong. Research has shown that we sometimes inflect downward to pitches below those that the voice can sustain. This possibility will be minimized if the subject prolongs the lowest tone for a few seconds. Following determination of the lowest pitch, the word "no" may be spoken as a question with a long upward inflection. If possible, the highest pitch reached should be sustained briefly. As before, the procedure should be repeated a number of times to make sure the maximum range is covered. The clinician will have to listen particularly closely during this procedure to hear and remember the lowest and highest pitches until they can be matched on the piano. Because there is likely to be more uncertainty in locating these tones with this method, not less than 10 measurements should be made of each. Any that are decidedly out of line with the majority should be discarded, and the average of the remainder should be taken as the final estimate.

A second difficulty in estimating a person's natural pitch level arises because individuals with voice disorders sometimes have restricted pitch ranges. The procedure described by Fairbanks was based on research with young adults who had superior speaking voices. It seems to work very well for those with average or greater pitch ranges. However, when a person has a very restricted pitch range, estimating his natural pitch level as 25 percent up his total singing range from his lowest tone is likely to result in estimates that are consistently too low. For example, if this procedure is followed strictly with an individual who has a range of only one octave, his natural pitch level will be estimated as being only one and one-half tones above his lowest pitch. This is so low that there is very little chance for pitch inflections to occur below this level. It is necessary, therefore, to compensate for this systematic error. The following procedure is recommended:

1. Use the Fairbanks table reproduced here to estimate the

natural pitch level for any person who has a pitch range of two octaves or more.

2. For individuals having pitch ranges between one and two octaves, take as the estimate of natural pitch level the pitch three musical tones above the lowest note that the subject can produce.

3. For those few individuals who may have pitch ranges of even less than one octave, the mid-pitch of the range should be chosen as the one to be made habitual.

Finally, it should be emphasized that a method such as the one outlined here can be employed too rigidly. One should check the results obtained by careful observation of the result. The pitch level chosen should be one where voice can be produced most easily and efficiently and from which easy natural inflections can be produced, in both an upward and a downward direction. One should experiment to see whether or not it does produce any improvement in voice.

VII

AN OPEN LETTER TO THE MOTHER OF A "STUTTERING" CHILD

Dear Mrs. Smith:

I deeply appreciate your concern about the speech of Fred, your 4-year-old boy. You say that he is healthy, alert, and generally normal by any standards you know about. But you feel that, in spite of all this, he stutters.

It will interest you to know that the great majority of 4-year-old children regarded as stutterers by their parents fit that general description. I want to say to you what I should say to the mothers of the many thousands of other "Freds."

Toward the end of this letter I am going to make a few suggestions which I believe might prove helpful. If you are like other intelligent and conscientious mothers, however, you would like to understand clearly what is back of these recommendations before you try them out on your own child. For that reason, I

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shall introduce the suggestions by giving you certain information.

This information has been obtained in the course of several years of research. Certain studies made of very young children regarded by their parents as stutterers have been particularly revealing. In summarizing the main findings of this research, I shall try to emphasize those points which will help you most to understand the problem that you feel you have with Fred's speech.

• • •

First of all, I want to try to put you at ease by stressing that our research findings indicate that children and adults who are thought of by themselves and others as stutterers are not generally abnormal or inferior. Concerning this point, I should like to make as clear a statement as possible—and I make it on the basis of several hundred scientific studies, including a series of investigations involving some 1,000 mothers and fathers and 500 of their young children. Half of these children had been classified by their parents as stutterers and half as nonstutterers.

The statement I have to make is this: About seven out of every 1,000 school children are classified as stutterers. I think any expert can be quite safely challenged to examine 1,000 children who have not yet begun to speak and to pick out the seven among them who will be regarded as stutterers five to 10 years later. In fact, I should be willing to let the expert examine the children after they had begun to speak but before any of them had come to be labeled as stutterers. I should not want him to talk with the parents, but he could examine the children as much as he liked in search of any physical abnormalities that he might suppose to be causes of stuttering. And if he were asked to pick out those who would later be thought of as stutterers, my best judgment is that he could do little better than make pure guesses.

Indeed, I doubt that any examiner could go into a room in which there are 1,000 adult men and women and pick out the seven stutterers whom we shall include in the group. He may use any physical or psychological tests he prefers on each person, except that he may not hear him speak or obtain information about how he speaks or feels about his speech. I should be surprised if the examiner could make clearly better selections with his tests than he could by means of eenie-meenie-minie-moe.

So far as I know, persons classified as stutterers are not significantly different as a group from persons regarded as nonstutterers, aside from their speech behavior and the way they feel about their speaking experiences. In fact, even the speech of most young children who are taken by their parents to be stutterers is essentially and for the most part not unusual—but it does become more or less unusual in most cases after their parents begin to think of them as stutterers.

• • •

This last point is particularly important. I mentioned above that we have made several studies involving some 500 young children regarded by their parents either as stutterers or normal speakers. As the first findings came in we were frankly puzzled. We soon discovered that it was difficult in most cases, often impossible, to see any difference between the speech of children *newly classified* as stutterers and the speech of other children.

We decided to make a series of precise studies of the speech fluency of normal youngsters. Since this had never been done, nobody knew just how smoothly young children do talk. We found that 2-, 3-, and 4-year-old children in a large nursery school spoke on the average with about 50 repetitions per 1,000 words. It was taken for granted by everyone that these children were normal speakers. They repeated "suh-suh" sounds like that, "or-or-or" words, "or-two-or-two" or more words. We found no child who never did this sort of thing and those who repeated the most did it more than 100 times per 1,000 words. These are norms—figures for fairly representative normal children.

Now, we were greatly puzzled by the fact that most of the youngsters whose parents believed they had begun to stutter appeared to be speaking as fluently as that—at the particular moment of the particular day *when their parents first thought of them as "stutterers,"* so far as this day or moment could be determined. After a great deal of research, we were forced to conclude that these children were in general like other children—and that even their speech itself was in most cases apparently like that of other children during the general period when they were first regarded as "stutterers."

This is not to say that they were talking perfectly. It is only to say that when we compared them with other youngsters of

their age, and when we took account of the circumstances in which they were speaking, their speech behavior seemed "understandable or acceptable for their stage of development and under the circumstances." They were more disfluent—hesitant and repetitious—sometimes than they were other times, and this is true of children generally. To all appearances, most of the parents had applied the label "stuttering" to essentially the same types of speech behavior that other parents apparently take in stride and do not call "stuttering."

• • •

We were faced with the question of whether the name used by a child's parents in referring to him or to his manner of speaking could make any difference. Doesn't a rose by any other name smell just as sweet?

Our research findings suggested that, Shakespeare notwithstanding, a rose by certain kinds of other names doesn't smell the same at all. If you regard your child as a "stutterer" you are likely to get one kind of speech development, and if you evaluate him as a "normal" or "good" or "acceptable" speaker you will probably get another kind of speech behavior.

I can illustrate what I mean by telling you briefly about two cases. The first is that of Jimmy, who as a pupil in the grades was regarded as a superior speaker. He won a number of speaking contests and often served as chairman of small groups. Upon entering the ninth grade he changed to another school. A "speech examiner" saw Jimmy twice during the one year he spent in that school. The first time she made a recording of his speech. The second time she played the record for him, and after listening to it, told him he was a "stutterer."

Now, if you can remember the first time you tried to speak into a speech recording machine you can understand what seems to have happened. In the studies referred to previously all the children spoke with hesitations, repetitions, "uh-uh-uhs," etc. It is easy to see how the apparently inexperienced examiner misjudged Jimmy who was, after all, a superior speaker as ninth graders go.

He took the supposedly "expert" judgment to heart, however. The examiner told him to speak slowly, to watch himself, to try to control his speech. Jimmy's parents were quite upset.

They looked upon Jimmy's speech as one of his chief talents, and they set about with a will to help him, reminding him of any little slip or hesitation. Jimmy became as self-conscious as the legendary centipede who had been told "how" to walk. He soon developed tense, jerky, hesitant, apprehensive speech—the kind that a speech pathologist would call stuttering in the clinical sense of the word.

The second instance involved Gene, a 3-year-old boy. His father became concerned one evening because now and then Gene repeated a sound or a word. (He had been doing this all along, of course, but his father hadn't noticed it before.) The father reported that Gene didn't seem to know he was doing it and wasn't the least bit tense about it. The next day the father remarked to the family doctor that Gene "was beginning to stutter." Taking the father's word for it, and evidently taking for granted that the father meant the same thing he did by the word "stutter," he told the father to have Gene take a deep breath before trying to speak. Within 48 hours Gene was practically speechless. The deep breath had become a frantic gasping from which Gene looked out with wide-eyed bewilderment.

These are real cases, and in their essential features—though not, of course, in specific detail—they seem to be representative. We were mystified as our investigations went on and such results as I have sketched kept coming in. Not only were practically all of the so-called stuttering children, at the time when someone first began to think of them as stutterers, speaking like other children who were not thought to be stuttering, but also we could find no evidence that they had suffered more injuries and diseases. Moreover, contrary to the traditional theory that stuttering usually begins as the result of serious illness, severe fright or shock, and the like, we found that just as an amazing proportion of traffic accidents occur on dry, straight highways, in daylight, in the country, in good automobiles, so in most cases *the problem* called "stuttering" develops in ordinary homes, under conditions that are not dramatic, in children who are apparently not unusual and who speak as well as other youngsters of their age.

• • •

The so-called stuttering youngsters were so puzzling just because they appeared to be so normal—until we decided to give up

the assumption that they should necessarily be abnormal. Then the mystery began to lift. Slowly we saw more and more clearly what was staring us in the face. I suspect that it had been overlooked for so long—for centuries, in fact—just because it is so obvious.

What we had overlooked and what we had not noticed was simply that, in case after case, stuttering, as a serious problem, developed *after it had been diagnosed.* The diagnosis of stuttering—that is, the decision made by someone that a child is beginning to stutter—is one of the causes of the stuttering problem, and apparently one of the most potent causes.

Having labeled the child's hesitations and repetitions as "stuttering," the listener—somewhat more often the mother than the father—reacts to them as if they were all that the label implies. She seems to do this—to react to *the label* that she herself has decided to use—without realizing that she is doing it at all. By her very facial expression and tone of voice, as well as by what she tells the child, she tends (without meaning to, certainly!) to convince him that he is not speaking "well enough" and that she disapproves of the way he speaks. She disapproves of it because she disapproves of the label she herself has given it. In her zeal to "control" what she now calls his "stuttering," she might, with the very best of intentions, even influence her child to feel that she no longer loves him, or at least that she is disappointed in him.

Her label "stuttering," you see, implies to her that her child needs help, and she, of course, is eager to help him because, like you, she loves her child deeply. She may show the child how to inhale and how to exhale, how to speak more slowly, how to breathe "with the abdomen" or "with the chest," how to place the tongue for certain sounds. She may urge him—perhaps with considerable urgency—to "relax" and "take it easy," or to stop and start over, or to "think out" what he intends to say before he tries to say it. Occasionally a parent might, shall we say, scold her child if he does not speak smoothly after all these "helpful" instructions. The major and unfortunate result of all this is that the child "catches" her own attitude of anxiety and disapproval of his speech when he does not speak smoothly.

As soon as he has acquired this attitude he too begins to have

feelings of uneasiness and disapproval. He begins to make ingenious attempts to speak according to the standard of fluency which his mother appears to favor. He tries hard. He does so want to do the thing properly—so his mother will smile again. Naturally, he exerts effort, he strains. Of course, he cannot strain without holding his lips together tightly, or holding the tongue against the roof of the mouth, or constricting the muscles of his throat. He cannot exert effort in certain ways without holding his breath.

By doing these things he interferes with his speech even more. He feels that he is "stuttering" worse, therefore, and so he makes greater efforts to "keep from stuttering," and these greater efforts, in turn, are felt by him—and are regarded by his mother and father and other listeners—as "more severe stuttering." His mother, understandably, tries harder to "help." She urges her husband to pay more attention to "the stuttering" and "do something about it." Maybe she talks to her close friends about it, and they also try to be "helpful." Any child reacts to all this, if only slightly, and some children become quite tense and unsettled. In some cases the child finally reaches the point where he is straining much of the time and so speaks with what appears to be great difficulty.

This, then, is a general account of how *the problem* called "stuttering" usually begins and develops. I believe this sketch might help you to understand better the problem which *you and Fred* are experiencing. If other factors also are operating in your situation they are to be given due consideration.

In giving you this information, I have by no means intended to say that you have done something for which you are to be criticized. On the contrary, it is to be taken for granted that you have acted from the finest of motives—the love you feel for Fred. Fred knows this and you know it. You have done the best that you have known how to do. My sole purpose in writing as I do is to help you see how best to help Fred, which is what you want so very much to do.

• • •

If I have outlined then, in the main essentials at least, the problem with which you have to deal, I believe the following suggestions will prove helpful:

1. It is far from likely that Fred speaks the way he does because of any physical fault. You might, perhaps, have other reasons for taking Fred to see a physician. If he has any need for medical attention it should be provided for him. Nothing should be done, however, to suggest to him that he is frail if he is not, that he is sick if he is well, or that he should get more rest and sleep than he actually needs.

2. Do nothing at any time, by word or deed or posture or facial expression, that would serve to call Fred's attention to *the interruptions* in his speech. Above all, do nothing that would make him regard them as abnormal or unacceptable. If he has begun to notice his own hesitatings, help him to feel that they are understandable under the circumstances and so, of course, acceptable. In doing this, however, do not make the mistake of "protesting too much." You can make Fred self-conscious about his speech even by praising it—if you praise it to excess. Err, if you must, on the side of approving it a bit more than is justified.

I am not suggesting that you "pay no attention to Fred's stuttering." You may often be given advice in these exact words. The people who give it to you have good intentions. Meanwhile, the wording of the advice is not quite right, in my judgment. Here is what I mean: if Fred repeats and hesitates (speaks disfluently) in the ways that are more or less ordinary for his age and for the sorts of situations in which he is talking, he is simply not doing anything that might usefully be called by such a grave-sounding name as "stuttering" in the first place. He is just speaking normally, and normal speech is more or less disfluent. If he is more hesitant in speech than most children are, and especially if he hesitates with strain or tensing, look about him, and at yourself, and try to find out the reasons. Then do what you can to remove them. Don't "pay no attention" to the *unusual* reactions Fred is making to the *unusual* things in his surroundings that need to be changed.

3. In order to see Fred and his speech in proper relation to the things and persons about him, and to develop a proper perspective in viewing Fred's hesitating and repeating, you should observe carefully:

a. the conditions under which he hesitates and repeats;

b. the times when he speaks smoothly and easily;

c. the ways in which he is, generally speaking, a "regular boy";

d. the times when other youngsters of his age also speak hesitantly and repetitiously more or less the way Fred does, especially when they are "excited" or "talking over their heads" or when frustrated and under other such conditions;

e. the times when Fred does not speak fluently but yet does not fail utterly or "go all to pieces"—the times when he repeats sounds or words or says "uh-uh-uh" more or less smoothly (as he commonly did before and at the time when you first began to wonder whether he might be a "stutterer").

4. Do not label or classify Fred as a "stutterer." If you do, you will have a very powerful tendency to treat him as if he were as abnormal and unfortunate as the label suggests, and this may affect badly the way he feels about himself and weaken his self-confidence. This is a great and needless risk. Instead of saying vaguely and ominously that he "stutters," say more clearly and calmly what you mean—that under certain conditions (*and describe these specific conditions*) he repeats sounds or words, says "uh-uh-uh," or whatever it is he does (*and describe specifically what he does*).

You are your own most affected listener, and when you tell yourself that Fred is a "stutterer" you do something to your feelings about him that you don't do when you tell yourself that he repeats words or says "uh-uh" in talking about a new family of squirrels he is excited about and doesn't know how to describe to you while you're busy trying to fix dinner–or to his father who is watching television or reading the newspaper and not paying much attention to what Fred is saying. It's pretty difficult for you, too, to talk smoothly about something you consider very important to someone who doesn't pay much attention to what you are saying. It's hard for you to do that without a certain amount of hemming and hawing and backing and filling even when you know very well what you want to say and when you know exactly the words you need to use. Much of the time Fred doesn't quite know what he's talking about and he needs words he has never used before.

What you tell yourself about Fred is a matter of such profoundly fundamental importance that I could not possibly emphasize it too much. The way you classify Fred—and the names you give to what he does—will determine very largely the way you feel about him and react to him. This is as true of his speaking as it is of everything else about him. If we label a boy a thief, no good will come of it, because it will become harder and harder for him to do anything honest or honorable in our eyes. If we frequently call a youngster "stupid," it will be very unlikely that we will ever see the intelligent ways he behaves. Just so, if we think of a child as a "stutterer" we will worry about him, keep our ears tuned for the bobbles and imperfections in his speech, and literally not hear what he does well when he speaks.

5. You are already "tuned in" to the disfluencies in Fred's speech that you call "stuttering." Take a tip from the noted speech pathologist, Dr. Dean Williams, and "tune yourself in" to the disfluencies in Fred's speech that you would call "normal" or "normal under the circumstances for a child of Fred's age." The chances are that you will notice more and more "normal repetitions and hesitations" and fewer and fewer "stutterings" as time goes on—and Fred will sense the difference this will make in you and your feelings about him, and he will find it easier to talk to you with your new feelings.

6. There are certain conditions under which practically any child tends to speak smoothly and other conditions under which he tends to speak hesitantly. You will find it wise, therefore, to observe the following simple rules:

First of all and above all, try to be the kind of listener your child likes to talk to. You know a great deal about how to be this kind of listener, but it may be that no one has ever helped you realize how tremendously important it is to Fred—and to you, and to the two of you together—that you be such a listener whenever he talks to you.

He should never have reason to doubt that you love him and that you enjoy hearing him talk.

Read to Fred whenever you can. In reading or speaking to him, enunciate clearly, be interested in what you are reading, and avoid a tense, impatient, or loud voice. Enjoy this reading and make it fun and companionable. Do some of it every day, preferably just before bedtime, if possible.

Don't say, "No, you can't" or "Don't do that" when it really wouldn't matter if he did go ahead and do what he wanted to. Try to keep "Stop that" and "Don't do that" remarks down to a fourth or less of all things you say to Fred—and see what you do say to him then, most of the time. You'll probably enjoy the time you spend with Fred much more if you do this.

Say, "That's fine!" to Fred much more often than, for example, "Don't be so careless and awkward!" Rewards are far better than punishments.

Avoid asking Fred to "speak pieces" for company or to "show off" in other ways.

Don't keep him in a state of excitement by allowing too much teasing, nagging, bullying, or too much "running and jumping."

See that Fred's brothers and sisters are not always "bossing" him or not always talking when he wants to talk.

In general, try to avoid situations that are needlessly or unduly frustrating, exciting, bewildering, tiring, humiliating, or frightening to Fred.

When you take Fred to strange places or ask him to do something that is new to him, prepare him for it by explaining ahead of time.

When he is "talking over his head" be patient, and now and then supply him with a new word which he has not yet learned but which he needs at the moment. To a reasonable extent and *in meaningful ways* help him to add to his vocabulary—preferably at those times when he needs words he hasn't yet learned in order to tell you things he has never tried to say before.

As for "discipline," so far as possible help Fred to discipline himself. Help him to understand how others feel and to be considerate of them. If Fred is to be loved he must be lovable. Help him learn how to be.

My last suggestion may sound quite drastic, but I believe you might find it worthwhile: Try at all times when it seems practical to be as friendly and considerate toward Fred as you would be toward a house guest.

• • •

Unless the speech problem that *you and Fred are in together* is in some way exceptional or has developed into a truly serious form, these suggestions should prove helpful. You will not, I am sure, expect more from the printed page than would be reason-

able—and you will remember that Fred is only human. His speech —or yours or mine—will never be as fluent as a faucet. All children hesitate and repeat and stumble more or less in speaking—and so do all adults. Even the most silver-tongued orator makes an occasional bobble. But if within six months or so you feel, for any reason, that Fred is not talking as smoothly and easily as he should, I hope you will consult a speech clinician—preferably, of course, one who is certified by the American Speech and Hearing Association.[1]

Yours very sincerely,
WENDELL JOHNSON

[1] The American Speech and Hearing Association is the recognized professional organization of speech pathologists and audiologists in the United States. The address of the Association is 9030 Old Georgetown Road, Washington, D.C. 20014.

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